The Builder.

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New Admiralty and War-Office Buildings.

FEW persons will be likely to dispute the propriety of the resolve, which, in a very straightforward manner, has been announced by the Government, no longer to allow our great Ministries of War and of Marine to seek shelter for their official staff in a series of private houses, wholly unfitted for the orderly transaction of the business of these important departments. The only possible objection at which the official circular hints, that of cost, if properly looked at, applies, not to the new buildings, but to the maintenance of the present makeshift. Costly, indeed, has that proved to be in more ways than one. Irritating as is the loss of time occasioned by such an imperfect distribution of clerks and heads of departments; hostile to the orderly, and thus to the efficient and economical, transaction of business as it has been long admitted to be, we have paid yet a heavier tax for our neglect. We need not here recall the names of those whose loss has been lamented in our own columns,—public servants not easily to be replaced, who have sunk victims to the unsanitary condition of the substitutes for ministerial buildings. And we have a word or two to say as to the primary caution against the perpetuation of this evil in the new building.

Nor is it with regard to the sanitary provisions for the new building alone that we see some ground for anxiety. We confess to certain qualms that are raised by one expression in the circular issued by the First Commissioner of Works,—which, to the lay or non-architectural reader, may seem only to point out an obvious requisite. So obvious, indeed, to the architect is the principle that plan should regulate, rather than depend on, elevation, that to dwell too much on the fact seems rather to intimate that architecture is regarded, not as a structural, but as a decorative art, and that it is one thing to arrange a building with due regard for its proper purposes, and another to adorn it with an *appliqué* façade. It is unnecessary to insist, in speaking to our own readers, on the mischief that cannot fail to arise from such a thorough misconception of the functions of the architect. Nothing can more surely lead to what we may call pictorial failure, than the idea that "architectural features," and "interior arrangements," may be independent of, or hostile to, one another. "It is intended," says the official circular, "that the architectural features of the new building shall be subordinate to its main purpose of a great public office, and not the determining cause of its interior arrangements; but the frontage to Whitehall, and that looking up the Mall, will afford opportunities for well-proportioned and handsome façades."

The hesitation that we express as to this sentence is not owing to any idea that plan should be sacrificed to elevation. Nothing can, indeed, be more truly unarchitectural. To place a triumphal arch, or some equally useless bit of work, as a central feature, and to allow the business arrangements of the place to sneak as best they may around the base of such a monumental centre, would be a piece of folly, not perhaps without precedent, but against which we trust that it is really unnecessary in the present day to protest. But the point on which we insist is, that the "interior arrangements" of a great public office are, if properly designed and carried out, eminently "architectural features." It is from the adequate design and fitness of such features for the main purposes of great public offices that the true organisation of the whole edifice must grow. "Well-proportioned and handsome façades" are not to be stuck on a pile of offices as something independent, as mere decoration, employed like a coat of paint or of stucco. If the façades do not find their motive in proper interior arrangements they will be nothing but shams, and, therefore, nothing but failures. What is wanted, and what the nation and the age demand, is, not a nest of rooms with here and there a façade stuck on, but a fitting and noble building, a whole and complete work, well designed, both as respects accommodation and appearance.

The first point to inquire into is, What are the main requisites for such a public building as on the Continent would be called by some name equivalent to the English word "Ministry"? Of these we have abundant examples in Paris, Vienna, Naples, St. Petersburg, and other Continental cities. And in face of that prevailing misconception of the true nature of architecture as to which the Ministerial circular only too truly represents the general tone of lay feeling among us, it might be useful to obtain plans and elevations of such of these buildings as best answer their business ends, as well as best fulfil their architectural requirements, in the various European capitals; and to exhibit them in some convenient locality when the matter is brought before Parliament. There would then be some chance that the debates which are sure to occur will not be wholly ignorant and purposeless.

The leading requisite of the buildings, we venture to suggest, will be the collocation under the same roof of a sufficient number of distinct apartments to provide for the whole staff of what, in other countries, would be called the Ministries of War and of Marine. There is no reason, of which we are aware, for any great variety in the size and distribution of these rooms. Interior courts, as mentioned in the circular, will be necessary for the purposes of lighting and ventilation. This will involve the construction of one or more *portoni*, or carriage-entrances, which will naturally form central features in the façades, relieving the otherwise too great repetition of the numerous windows by their deep shadow. Bold and rich decorative features may well adorn such principal entrances; and a great staircase, or pair of staircases, will also afford occasion for the display of a true architectural taste.

One difficulty, as far as our experience goes, in the distribution of the buildings, is that of lighting the corridors. Not only on account of the value of the site, but for the sake of official convenience, the buildings will have to be in three or more stories. The lighting of the corridors will thus be impracticable in the best mode,—that is to say, by skylights, except in the top story. End windows, no doubt, will be introduced; but the light thus obtained is both feeble and dazzling to the eye in a long corridor; and the use of borrowed light from the rooms on either side, which always gives a gloomy and prison-like effect in London, in certain states of the atmosphere, can only make darkness visible. The expedient of artificial light during the day, which has been adopted in one very ugly but very commodious Ministry in Italy with which we are familiar, is objectionable on many grounds. Considering the revolution now in progress in the practice of illumination, especially as illustrated in those American cities to which we recently called attention, it may be hoped that the danger and evil odour which are too apt to attend on the introduction of gas may be avoided in the new buildings.

The elevation of the Palace at Stockholm (apart from the arrangement of the approaches, which would be inappropriate to the London site), is one to which we call attention as likely to suggest, at all events, very useful hints for the design of the new Ministries. In the simplicity and grandeur of the whole design, in the opinion of very competent judges, this building stands unrivalled among the palaces of Europe, with the single exception of the Palazzo Farnese at Rome; and in some respects its proportions are even better than those of the latter edifice. And it has especially to be borne in mind that Nicolas de Tessin, who built this palace for King Charles XII., was here unusually happy in the adaptation of architectural forms to a Northern climate. In the garden front and in the cortile of the Farnese Palace, in the arcade of the Barberini Palace, another Roman example, in the elevation of the Chiericate Palace at Vicenza, in the proportions of the Doria Palace at Genoa, in the wings of the Durazzo Palace, in the same city, and in not a few other noble Italian examples, the adaptation of the building to a Southern climate is so evident, as to render the reproduction of any similar elevation in London simply ridiculous. The Palace at Caserta would be less liable to this objection. But in this the basement story is so evidently sacrificed to the grandeur of the *piano nobile*, or first-floor, as to be hardly appropriate for our habits. Still, Caserta is a

very noble building, and is an example of the effect of mass and of repetition rather than of richness of detail, in producing the impression of grandeur. But the Ionic pilasters at Caserta give unreality to the elevation. The Glyptothek at Munich, the Ruhmes Halle, near Munich, the Museum at Berlin, and we may, perhaps, add the Town-hall, Antwerp, are examples of those styles of building which (whatever may be their excellence in the localities and for the objects cited), it becomes the London builder carefully to eschew.

The area covered by the Stockholm Palace is about 144,000 square feet, of which nearly half is open court. For the Whitehall buildings 112,000 ft. of building space are mentioned by the Circular as afforded by the area.

Of course we want no reproduction. We point to these structures as examples that at once occur, worthy to be considered by those architects who will be called upon or invited to submit designs for the new buildings.

We make, with all reserve, another suggestion. Shelter for carriages is now a necessity for any great London building. It has been recently attained, in some instances, as in the approach to the Paddington Station, by a glass roof, which, however comfortable, can hardly be regarded as ornamental. Too much space would be lost at Whitehall by the introduction of an outer court, such as that now existing at the Admiralty; and, as before hinted, a *portone*, giving access to the central court, will no doubt be adopted in the new building. We do not see why the whole central court should not be protected by a glass roof, raised high enough above the roofs of the sides of the quadrangle to allow of free ventilation, and of the admission of some pure light, yet adequate to keep the inner court from being drenched. And in case of the adoption of this convenience, which it was not within the power of the great French and Italian architects to command, it is at least worth consideration how far the same shelter might be utilised for overcoming the difficulty before mentioned as to lighting the corridors.

The main buildings, no doubt, will contain two apartments in width. The difficulty is as to lighting the corridor, if placed in the midst. There are yet, we fancy, extant, picturesque examples of the manner in which this difficulty was overcome in Old London, to be found in some of the inns in Bishopsgate-street. The mode is not unfamiliar in the south of Europe. We remember examples at Avignon. It might be worth while, at all events, to try upon paper how far the requisite conditions of access, shelter, and light might be secured by internal galleries, open on the courtyard, only supported by such structures as would be necessary for solidity, reached by external staircases, under the same shelter, and giving access to one set of rooms, which would be lighted from the side of the gallery, while the second set would be lighted from the external wall. That the inner row would form ante-chambers, giving access to the outer rooms, would in most cases be rather convenient than otherwise; and in the case of the rooms of the Minister, the Commander-in-Chief, or the heads of departments, a separate entrance could be easily arranged, either by short corridors opening on the gallery, or even by private staircases. As to this, it is to be understood we are not speaking further than to suggest the idea to the consideration of the architect.

On one point, however, we speak without any reserve. It is one to which we have on former occasions called attention; and as to which, if due attention is not now given to the matter, we venture to say that the concentration of the occupants of the thirty-eight houses now filled with the officials of the War Office and the Admiralty will only be a concentration of ill-health. We refer, of course, to the sewerage of the area on which the new offices are to be erected. We urge all those who are responsible for, or who take an interest in, the health of our officials in these great departments, to consult the twenty-fourth volume of the Minutes of Proceedings of the Institution of Civil Engineers. At page 280 they will find a paper on the main drainage of London, which was read by Mr. (now Sir) J. W. Bazalgette to the Institution on March 14th, 1865. On plate 17, which illustrates this paper, they will find a section of the Thames Embankment, showing the sewer miscalled the "low-level sewer," which drains, or rather does not drain, the site of the new buildings. The centre line of this sewer is only 13 ft. 6 in. below the high-water line, and is consequently from 7 ft. to 10 ft. above the low-water level at which the ancient sewers of Westminster made their escape into the river. The consequence of this most disastrous choice of level has been the penning back of an unknown amount of damp, wet, and old,—if not recent,—sewage over the whole area between the Thames and the Park. To this, to a considerable extent, the unsanitary state of the present Government offices can be traced; and to this, unless the matter be at once looked in the face, will the future ill-health of the occupants of the new buildings be attributable. Near Chelsea Hospital, as will be seen on the plan accompanying the paper in question, is a lift, which raises the sewage of an area of about eleven square miles to a height of 17 ft. 6 in. It is this very lift which is fatal to the salubrity of the most important district of London. At Marlborough House the difficulty has been met, we believe, by a special lifting apparatus. It is not for us to decide how it should be met in the case of the Admiralty and War Office. But we give fair warning to all concerned that if the new buildings are erected without looking this terrible evil in the face, they will prove nests of enteric fever. From Charing-cross, under the Mall, and down Grosvenor-road, to the sewer below the lift,—below, that is to say, in level,—measures a couple of miles on the map. Whether the really "low level" sewer would be able to take that fresh contribution to its contents we are, of course, unable to say. But unless by this or by other means a true low-level drainage be now substituted for that which exists in this part of Westminster, it needs no prophet to foretell evil, rather than good, from any concentration of the officers of the Government under the same roof.

We trust that the matter will be taken up in a becoming spirit, free either from crotchet, from party feeling, or, above all, from ignorant optimism. Of points of style and taste we are unwilling to speak. It will generally be held that the character of the Whitehall Banqueting-house must necessarily to a great extent limit the choice of the architect. But on the two distinct points,—first, that we require a complete building, not a parcel of rooms with a façade or two stuck on; and secondly, that sanitary safety of the foundation ought to precede building,—we feel that it is impossible to insist too strongly. We sincerely trust that all those minor points on which great differences of opinion are likely to arise will be kept in abeyance until the propriety of attending to these two primary requisites is fully admitted, and not only so, but practically carried into effect.

THE PROFESSION AND THE PRESS.

The address of the President of the Royal Institute of British Architects, reported in our pages, has awakened in the daily press what may be called a series of Irish echoes. A speaker occupying the position of the President has the advantage of both a scientific and a practical knowledge of the subject with which he deals, which he is by no means called upon to advertise or to magnify, but which forms the very atmosphere of his thought. The writer in the daily press, devoid of this special information, and very probably destitute of any special scientific or practical training of any kind, is at an unusual disadvantage when he takes upon him to comment on the language of one of the leaders of any liberal profession. The journalist may feel,—as we all do,—the pressure of much that is inconvenient, much that is to be lamented. But he is unaware either of what has been done, of what is doing, or of what it is practicable and desirable to do in the way of amendment. Thus his column of leaded type is little more, very often, than a sort of school-boy essay, in which there may be what is true, and even what is brilliant, but of which the outcome, if full of "sound and fury," none the less "signifies nothing."

Thus such a statement as that "at no period, it may be safely asserted, was the average English house less well adapted for attaining the main object which Mr. Street boasts English architects have particularly compassed" may be left to shine by its own light. Small wonder that the unscientific press has not, in this country, either the power or the status that it has attained in France, when it lends some of its oldest organs to such repeated attacks on an entire profession as we have before now had to mention with small favour in our columns.

There are now, in England and Wales, considerably more than three times as many inhabited houses as there were in the year 1800. In the month of May last, nearly 47,000 houses were in course of erection. Between April 4th, 1881, and April 3rd, 1871, 575,000 had been added to the number of our inhabited houses. Any person who has had occasion to travel through almost any part of England has the opportunity of noting the change that the last forty or fifty years has effected in our architecture, public, urban, and rural. Of the ten thousand churches reared since 1840, which have been either newly built or restored at a cost hardly less than that of rebuilding, we have before spoken. Since the passing of the Education Act the voluntary efforts of members of the Church of England have provided school accommodation for 935,993 additional children, making a total of 2,301,073. The Board schools have provided accommodation for 1,016,464 children. The Roman Catholics have increased their former school-room from 101,556 children to 242,403, or nearly two and a half times. The British, Wesleyan, and other schools have enlarged their limits from 411,948 to 582,403. Thus in the nine years following the passing of the Act, the English architect has provided school-room for 2,263,640 children, more than doubling the accommodation which existed in 1870, for 1,878,584 children, and bringing up the total accommodation to the amount of 4,142,224.

It is not only in the thousands of steeples and towers that dot our landscapes, or in the gables and porches of our thousands of new and generally picturesque schools, that the architect has been of late transforming the face of the country. What are the cottages of the poor now compared to their condition at the commencement of the century? Let any one recall what cottages were even forty years ago. What were those on the estates of the Duke of Rutland, in Derbyshire; of the Duke of Bedford, in Bucks; of the Marquis of Ailesbury, in Wilts,—of almost any great landowner? And what are they now, when an architect has been employed? The change is a positive transformation. We have an official record that throws some light on the growth of domestic architecture during the present century. That growth has been about 5 per cent. in advance of the growth of the population, something in the way of improvement, if not much. In 1800 there were 564 inhabitants to every 100 houses. In 1880 there were 537 inhabitants to every 100 houses. We take no note, in either case, of houses uninhabited or in course of building. In 1800 the uninhabited houses in England and Wales amounted to 3·1 per cent. of the inhabited houses. In 1880 the proportion had risen to 7·8 per cent. When we compare the visible improvement in size and accommodation which has taken place in both urban and rural domestic architecture with the facts that there are 4·8 per cent. fewer inhabitants in every average house, and that there are more than double the proportion of empty houses from which to choose a residence, it will, we think, be tolerably clear that the accommodation for the individual now offered is in advance of that which was the case at the commencement of the present century; and, where an architect has been employed, an advance also in the direction of comfort.

There is one style of journalism with which we have no sympathy. It is the style of the hopeless grumbler. It is pleasing, no doubt, to many people, or it would hardly be so often adopted as is the case. But we confess a grave doubt as to the utility of the purely critical in journalism. To point out faults is all very well,—if it lead to remedy; otherwise it has rather a demoralising tendency. One writer, as our readers will remember, was for imparting a new and sudden perfection to our "vernacular architecture" by the simple plan of turning all the architects adrift, and putting their work into the hands of the "inspired workman." Our own opinion points in diametrically the opposite direction. And we candidly appeal to those men who have the best opportunity of arriving at the truth,—architects who are largely consulted by intending purchasers or lessees of houses, or inspectors of metropolitan and urban districts. What is the general inference to be drawn from the cases of bad design, bad materials, and bad execution, which are constantly attracting the attention of such competent judges? May they not, nine times out of ten, be summed up in the remark,—absence of the control of a competent architect?

The speculative builder has generally enough

knowledge of his business to be aware that, as far as its legitimate exercise goes, it is a false economy to try to substitute uneducated agents for proper architectural control. He knows, well enough, that the services of a thoroughly competent architect will repay the amount of his commission over and over again. It is not for that cause that the jerry builder is his own architect. The saving that he strives to effect is a saving of that kind known as scamping. At every turn and corner of a house, from the sewers to the chimney-pot, it is possible to effect a considerable and a shameful economy. Bad materials, mud in lieu of mortar, bats instead of bricks, sappy wood, inferior slates, pipes badly laid, lath-and-plaster partitions instead of internal walls, shells of houses which, when by any chance a section is opened to the eye, bear about the same proportionate thickness to the interior of the house that the thickness of an egg-shell does to the volume of the egg. These are the points in which the unscrupulous builder saves outlay at the cost of the future inhabitant. These are the things which no respectable architect will sanction, and that is the true reason why his services are dispensed with.

We wish to keep this matter clearly before the public. In all occupations in a civilised state of society there are the higher and the lower grades. In the higher grades are to be found not only the practical experience collected throughout all the grades, but more complete education, and greater command of the whole subject. It has, therefore, been found, as a rule, to pay to engage the services of the highest grade; the higher price paid for it being, in point of fact, an economical outlay. Thus the barrister, the physician, the expert of all kinds maintains his position and his fees, because it is for the public interest, as shown by experience, that he should do so. Money out of pocket may be saved by taking a quack prescription to a chemist, instead of consulting a physician; by applying to that lawyer who, as the proverb says, has a fool for his client, and so on. But the saving turns out a loss. So it is, notably, in the craft and art of the builder, where supervision of a thorough and incorruptible kind is of the utmost value. You may need a physician once in four or five years; a lawyer once in ten; but you need a house every day and all day long. The counsel of the barrister or of the physician is given on a stated case, and there an end. The eyes of the architect, in person or in deputy, should be on every brick and every plank that is laid, while the house is in building. Therefore, the first thing for the intending tenant to inquire about before he takes a house is,—What architect, known to the profession, is responsible for the building?

If the householder be once made fully aware of what is the real significance of building without an architect, a signal blow, and great discouragement would be given to the class of jerry builders. We are not here touching the æsthetic part of the question. There it may be said the game flies too high. It might seem invidious to point out the glaring evidence that exists, in some very high places, of an unfortunate economy in the way of professional counsel. The thing for the public to get hold of is, that they will no more obtain thoroughly good houses,—to say nothing of handsome or picturesque houses,—unless by the intervention of a thoroughly good architect, than they will get through a dangerous illness without a good medical man, or a troublesome law-suit without a good lawyer.

It may even be inquired whether it would not be a boon to the householder at large for the architectural profession to include in its organisation a method of registration. We are not blind to certain inconveniences that might attend the introduction of such a method, but they would gradually tend to disappear. And the result, some little time hence, would be that "Built under the supervision of Mr. Flayscamp" would be an addition to the advertisement of a house to let or sell that would add more than the five per cent. to its real value. Houses would, by degrees, become classed not only according to size and locality, but also according to the warrant of thoroughness of construction that would be given by the signature of certain names. When the public once become aware of the evils attendant on quack building, more will have been done to ensure thorough excellence in our houses than will be effected by any number of miles of letterpress of which the theme is the incompetence of the English architect.

A NEW BOOK ON ARCHITECTURAL THEORY.

We return to the consideration of some of the more special points in regard to architectural art, which we deferred in speaking lately of Mr. Eidlitz's treatise.*

In the chapter headed "Monuments," which is not altogether so practical or so concentrated as it might have been, we come on an idea which is well worth more consideration than it has received, namely, as to the essentially new problem presented by the multiple character of many buildings required for the necessities of modern life. The author makes what to some will be the startling suggestion that architecture "for all the goodly age of this globe, is still in its infancy. We have seen in a former chapter that it deals with single cells, groups, and piles. In truth, the art has not yet risen above the single cell. In Mediæval architecture we certainly find groups of cells and exceptionally rambling piles, but the former are not yet fully developed, and the latter are mere accident, not premeditated, hence not art-work in that sense." This seems at variance with the illustration we quoted in our previous article, of the cathedral with its various divisions of baptistery, chapter-house, &c., as exemplifying architecture which is expressive of certain ideas; and the author is not quite consistent here. From another passage we conclude that in classing even the Mediæval cathedral under "single-cell" buildings he has been regarding it rather externally than internally, but even so it can hardly be classed, in this sense, with the Greek and Roman temple, except with a considerable modification of the definition. But we can pardon him this lapse of consistency, if his remark will but draw more attention to this essential distinction of modern architecture, multiplicity. As he says in another chapter, "The Greek temple is the expression of a single idea, and a single act illustrating it. Most modern structures are the result of a series of related acts, or, perhaps, of a series of ideas of various values, which must be exhibited in order to tell the story of the monument; and hence such a structure cannot be clothed in the simple drapery of antiquity." Considering the matter in this light, the composition of architectural groups is, as the author says, a problem reserved for the future. "This opens to us a vista of activity, which, when fairly reached, will generate works compared with which the cathedrals of the Middle Ages and Greek and Roman temples are the alphabet of art." This is a bold prophecy, and its realisation presupposes a period of architectural ability and genius which we do not see much sign of at present; but that this is a problem hardly solved, hardly even attempted, by most of the architecture of the present day, is unquestionably true, and we only wish the consideration of it could be kept more before the thoughts of architects and those who are interested in architecture. It at least offers us a field for the development of original architectural creation, such as seems almost inexhaustible, as the problem must continually vary and become more complicated with the progress of civilisation. How many town-halls are there among our modern structures (to take one class of building only) which make any attempt to exhibit a grouping derived from the actual arrangements and requirements of the plan?†

In the first part of the chapter on "Form and Construction" the author continues, to some extent, the consideration of the external expression to be given to the internal grouping of buildings, concerning which we will only say that his critical views are what we quite assent to. This portion of architectural designing may be considered as the modelling of the building as a whole, and of its groups; and in connexion with this we may glance at what is said elsewhere as to the modelling of parts. Here (pp. 366-7) the author suggests the true method of learning from Mediæval architecture and applying its principles without copying its details. "Architecture is the art of the development of structural forms." Having developed the main structural form of the whole, we have to express the function of organic structural parts. "If we know that more perfect structural expression may be attained by modelling each part than by facing it with a scenic representation of matured architectural form, then the architect *must* so model each part, and he cannot return to Roman practice, which fails to deal directly with the masses. The architect may reject Gothic forms, and necessarily must do so if the expression of the idea he attempts to materialise results in other forms, as it necessarily will, because the idea is modern and not Mediæval; but he cannot reject this Mediæval method of modelling structural masses." This is undoubtedly the true way to read Mediæval architecture as a suggestion for modern architecture. To make suggestions as to the manner of modelling parts of the structure so as to express their several functions would, of course, be futile, nor does the author attempt it. We come at that point upon the region in which individual thought and perception can exercise themselves in the development of modelling, and it is a question of innate perception, assisted no doubt by mental training, but innate to begin with. The man who does not possess such innate perception can acquire it by no course of teaching, and should not try to be an architect.

A long chapter is devoted to the subject of style, but the author's conclusions might have been expressed and justified (from his own point of view) in much briefer space. They amount to this, that the study of the styles of the past, or the method of regarding architecture as a subject made up of so many styles, is a fatal delusion which tends to destroy any following out of architecture in its true path,—in the only path in which it can become a living and developing art. This is much what Mr. Fergusson has already said; and we may observe that Mr. Eidlitz by no means seems to be aware how many of his own views have been anticipated by other writers on architecture; or, if he is aware, he is somewhat disingenuous in not acknowledging their previous teaching in the same direction; and it is certainly not fair to cite St. Peter's, as the author does, as being the central object of admiration of the architects of the Renaissance school, nor as "the greatest outcome of the Renaissance movement," unless "greatest" refers merely to measurement in feet or yards. No one, as far as we know,—no one who has any understanding of architecture, that is,—regards St. Peter's as the central or most important outcome of Renaissance architecture. On the contrary, it may be doubted if there is any important building about which there is such a general *consensus* of condemnation or dissatisfaction among architects and architectural writers of this generation; and no one has more strongly condemned it in detail than Mr. Fergusson in his "History of Modern Architecture," and on exactly the same grounds as those stated by the author we are now discussing.

Seeing so much space included under the heading of "Style," we looked to find some attempt to define wherein the property called "style" consists, but this part of the subject the author ignores. He does not seem to recognise that the expression "style," besides being applicable to one or another of the forms in which architecture has been practised in the past, has also a more abstract meaning as defining a quality, which is present in all art that is worth anything. The author exhorts the architect to "get rid of every vestige of that baneful thing he calls *style*," that is to say, to escape from regarding architecture as a series of styles, and to regard it as an art to be carried out on its own independent practical and æsthetic basis; and in that we entirely agree. But he ignores the other and very important meaning of the word "style," the quality which is so difficult to define, and which it is the last attainment of æsthetic culture to rightly perceive, but which may be said to consist, in architecture, in the coherent treatment of all the details in reference to one predominating constructive motive. Mr. Eidlitz may reply (and such a reply would not be without reason) that architecture carried out on the principles which he advocates would necessarily have "style" in this sense, but it would have been better, in that case, if he had been more precise in stating his case, and had discriminated between the two meanings of the word "style," the concrete and the abstract: because it is certainly hardly reasonable to urge architects to avoid the baneful influence of "style," when, in fact, style is the very quality

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* See p. 593, *ante*.

† We recollect, *apropos* of this, that at the time of the exhibition of the Law Court designs, a letter appeared in one of the daily papers, asking whether it was not a falsity to provide for the concentration of the courts in one immense building, giving the idea of unity of structure; whether they should not have appeared rather as a combination of a number of court buildings of separate design placed in intercommunication.

that so much of our modern architecture wants, and which no truly-developed architecture can well be without. If he had said, "The baneful influence of styles," it would have made all the difference. The architect should avoid imitating *styles*, but should aim at realising *style*. The question "What style is it in?" is one that the architect may disregard; but "Is there any style in it?" is quite another question in regard to a design, and one of vital importance.

In the chapter on "Proportion" the author has run his pen into one or two fallacies, and made one or two hits. Proportion, he says, is generally taken to mean this: "Given a temple of a certain length, what is to be its breadth and height, and what the respective dimensions of its columns, bases, capitals, and entablatures, &c., in order to respond to the laws of beauty?" This the author stigmatises as the popular way of putting the matter, which leads to this mischief, that the laws of beauty (if such laws exist), which are only relative, are by this reasoning raised to positive laws, derived from isolated examples. "Whenever it is asserted by a leading architect that the monument excels in the quality which is designated as beauty, it is assumed that all elements of beauty must be attributes of that monument. Proportion being one of those elements, the monument is said to be a model of proportion, and its proportions are recommended for use in other monuments erected in the same style." These proportions, as Mr. Eidlitz says, are determined by "taste," that vague guide, which has decided that Greek and Roman proportions are beautiful, and has measured them and laid them down as patterns for our modern cutters-out to model the architectural garment upon. This is the philosophy of the idea of universal ratios of proportion in architecture, which so many people have wished to impose upon us as the safest guide. Whether these ratios were really considered of such paramount importance by the Greeks as Vitruvius would have had us believe, is one thing, upon which there may be much room for discussion of a not very profitable character; at all events, they are of no use as guides to the architect of to-day, unless he wishes to sink to a mere servile imitator of "the orders," and we have all of us pretty well got past that now. There is another consideration in regard to "proportion," however, which is very important indeed, and is often quite overlooked in designing, viz.: the influence of scale on proportion of parts, and on this point Mr. Eidlitz draws attention to what he regards as an inherent fallacy attendant upon the application of Greek "order" proportions to any scale indiscriminately. He observes that if a design which is considered to be in fit proportion of parts, in regard to the strength of the supports and the weight of the superstructure, be simply doubled in scale, the increase of the mass of the superstructure takes place in a greater ratio than the increase in the area of the piers or supporting masses, consequently that an increase in the scale of the whole, without in any way altering the ratio of the parts, must lead to a disturbance of the due constructive proportion. This is a very important point in determining the proportion of parts in a structure, and it certainly appears to us that it is fatal to the Vitruvian theory of the proportion of the Orders; we say, advisedly, the Vitruvian theory, because we consider it very doubtful whether the theory of Vitruvius was that of the Greeks, or whether he really understood or represented the method and principles of the Greek architects. But we doubt whether there is much truth in the application that Mr. Eidlitz makes of this to the question of the relation between a small-scale drawing and the actual proportions of the building when executed. He suggests that failures in architectural proportion may and often do arise from the architect arranging his proportions in relation to the small-scale drawing of the design on paper, and finding these proportions unsatisfactory in the actual building. This may be, and often is, we suspect, a cause of failure and disappointment, but we believe it is generally in the reverse direction. The tendency in making a small-scale drawing almost always is to exaggerate the thickness of the smaller masses, such as shafts and mullions in Gothic design, and cornices and surbase mouldings in Classic design; and there are probably few small-scale drawings in which such features are not shown more thick and massive than is found to be desirable when the details come to be worked out full-size. It must also be observed that features which appear agreeable in proportion on a large scale would appear weak and fragile when used in the same proportions on a smaller scale. This is seen when, for instance, the Classic column is used or misused as a baluster, as has been sometimes done, when it always appears fragile and weak. This is probably due to an intuitive perception that, while we have so greatly reduced the mass of matter employed, the cohesive power of the material remains absolutely the same, and is, therefore, felt to be insufficient for so small a thickness of material. Nevertheless, the remarks on the subject are very suggestive, and are true at least in one sense, in regard to the proper structural relation of masses.

The chapter on ornament and colour decoration is an exceedingly good one, and we recommend its careful perusal. The author understands very well the function of ornament in assisting the expression of a building; and he combines with his remarks on this some rather novel observations as to the effect of different ways of finishing the surface of a building material. He observes that "a rough quarry face, as well as a polished surface of many sorts of stone, reveals a vigorous crystallisation, and heightens the colour, and thus indirectly the apparent capability of the material to do mechanical work. The experiment may be tried with various cubes of one and the same stone, and of equal dimensions, which may be made to range from a rough quarry face to a finely-tooled surface, and it will be found that the rougher the surface the greater the seeming rigidity of the material." The reason he assigns for this is that the rough stone betrays the nature of its crystallisation, of which we know, from practical experience, that it serves to resist great pressure; while in stone that has been rubbed to a smooth surface, the natural grain is obliterated, and an artificial grain substituted, which resembles the grain of other matter (not stone) which we know to resist pressure but indifferently, unless the stone is further polished, and in this way again made to betray its crystallisation. That this is practically felt in many cases is obvious from the frequent use of rough stone in the basement of a building and tooled stone above; and the device known as "Rustication" is a logical deduction from this, and a carrying out of the same effect artificially on a larger scale. In referring to the effect of colour on apparent structural stability, the author lays down the rule that "the deeper the colour of a structural part, the greater its apparent resistance to strain," and this we believe to be quite true. A heavily-decorated vault in deep colour, resting on white marble columns, would always appear insufficiently supported.

Mr. Eidlitz does not illustrate his remarks by any drawings or diagrams, without which some of his observations will not, perhaps, be readily intelligible except to professional architects. To which class his book is intended to be directly addressed, to the professional or the lay readers, is not very apparent. To those of the profession who have got into practice it is not of much use to appeal for any reconsideration of the theory of their profession; they have got into their groove, and cannot, in the practical sense, afford to make a new departure, even if they attached any weight to another man's judgment, which architects are not more ready to do than other professional men. Young architects who have not yet commenced their profession, or got their ideas about it crystallised beyond the possibility of readjustment, would do well to read Mr. Eidlitz's book, and give consideration to some of the suggestions contained therein; and if the book gets into circulation among general readers, it ought to produce a beneficial effect in giving some more correct ideas as to what architecture really means than most people at present possess. We certainly desire to see a book of this kind gain the ear of the public. Some very foolish and empirical architectural books have obtained circulation of late years, and have been recommended by the "critics" of the daily papers in all the innocence of ignorance; we hope that a book, which, at all events, contains more good sense and logical thought than the average of architectural writings, may obtain some attention also from a public much needing to be enlightened on the subject of which it treats. The best theories of architecture, however, are of little account, and can hardly ever be exemplified as the best, till they find their way into practical demonstration. We do not mean to imply that the author forgets this; on the contrary, if we understand him rightly, it is the keynote of his treatise that architectural style is among the problems of which it may emphatically be said, *solvuntur ambulando*.

THE PROBABILITY OF DEARER COAL.

THE importance to all the great trades of a cheap and full supply of fuel, as well as its importance to every household, make the question of the possibility of a considerable advance in the price of coal one of great moment. It is worth while, then, ascertaining whether the prospects of the coal trade tend in that direction. After the sudden bound upwards in the price of coal eight years ago, there was a slow but as complete a fall, and the price of coal has been for some years so low that it has left little profit to the coal-owner. Indeed, in the past year, the collieries of one of the largest coal-owning companies in the north-west of England, —the West Cumberland Iron and Coal Company,—have been worked at a loss, which has lessened the profits in the iron and steel branches of the company's undertakings. But there are indications that this state of affairs in the coal trade is likely very soon to pass away. One of the reasons for this is that the price of raising coal has been of late permanently raised as the result of legislative action. Another reason is more immediately connected with the output of coal. It is usually the case that when there is an increased demand for coal, it is shown first by an enlargement of the output, and then by an increase in the price. For the past five years, —down to last year,—the output of coal has been, on the whole, stationary, whilst the price tended downwards. But the demand that burst out nearly two years ago for iron and steel for the United States caused a very great advance in the demand for coal, and the production for the past year showed one of the most surprising increases that have ever been known in the history of the coal trade. But there are grounds for the belief that when the official returns are procurable for the year 1881 they will prove that that increase in the production has continued throughout the year. Some of the figures that are already tabulated show that the increase has been continued in some of the chief modes of disposal of the coal output. More has been sent to the metropolis; more has been exported to other countries; and though figures are not to hand to show it, it is tolerably clear that more will have been used in manufactures. Other sources of consumption, — such as for railway uses and for the gas manufacture,— show enlarged use, and hence there is tolerably safe ground for the opinion that in the course of a few months we shall learn authoritatively that the coal output of the kingdom has continued to increase even from the high figures attained in the latest year yet returned by the tardy official figures.

As the coal output is increased in this way, the cost of production of coal is on the average raised. This is because when the price is very low, the pits and seams of coal that are cheapest to work are those that are kept in operation; and as additional ones are needed to be put to work, it is those where the cost is rather higher that are started. Moreover, the demand draws nearer the extent of the supply that is available. Some of the producers find the whole of their production taken up, and the tendency of the market is to "stiffen" under these circumstances. This process is now in progress, and there is at the present time a distinct addition to the general prices of coal that had prevailed up to, say, five or six months ago. There are no signs of abatement of the increase in the demand for coal for mining and metallurgical purposes, and the normal increase in the consumption for marine steam purposes, for the gas manufacture, &c., shows no sign of checking. Hence it may be assumed that there will be a growth of the demand, and from the causes just glanced at a slight addition to the prices. But the wages of the workmen are now a very important factor in prices, and as these are now regulated by the price of coal in very large degree, it may be expected that the wages will tend in a slight degree upwards, and thus a stimulus to a further movement will be given for the future; and it would be impossible to define, with any attempt at probability, the extent of that influence. There is, and must be, an increase in the consumption of coal, and though the economies that have been effected in the consumption lessen the rate of that increase, and may in the future still lessen it, yet its

effect is only to retard and not to stop the onward movement. Unquestionably, it will be felt more in some of the coal-yielding districts than in others,—probably that effect being defined in great degree by the nature of the coal that is chiefly raised.

One of our great metallurgical and mining authorities, Dr. Siemens, years ago stated that we had entered upon an era of comparatively cheap coal, and he indicated at length his reasons for that belief. The event has proved that the assertion was one soundly based. But some of these reasons do not now hold good, and we have seen that there are grounds for believing that an increased consumption of coal is probable. If the increased consumption were put to its fullest use, it would be a subject for national congratulation; but this is not the case. There is an enormous waste of coal, and of the power that it represents. Especially is it the case in the household consumption and in that for the purpose of raising steam-power. And in view of the increase in the price of coal that seems to be now probable, and of what may be considered perhaps as the increasing scarcity that may be said to be possible, it is a subject that will need to be brought forward and keenly canvassed, whether there cannot be a check put to the increase in the use of coal by the better consumption and diminished waste of the quantity that we do use. We have seen what has been done, and is being done, in this direction by the ironmasters and by others interested in allied industries; it has been clearly demonstrated how large a proportion of the coal used could be saved if there were proper boilers and engines; and it is to be hoped that the subject will obtain the needful attention before high prices render it an imperative necessity. We have not only a waste of power by the imperfect combustion, but we are thereby converting part of a blessing and a source of strength into a curse and a weakness; and it is to be hoped that the question as to the cheapest fuel,—gas, coke, or coal,—and that of how to extract the largest amount of power therefrom, may speedily impress the national conscience.

THE EARLY YEARS OF MARIETTE-PACHA.

An interesting contribution towards a complete biography of the distinguished Egyptologist, Auguste Mariette, has been recently published at Boulogne-sur-Mer, his native town, by M. Ernest Deseille, under the title of "Les Débuts de Mariette-Pacha," from which we may glean some particulars of the early life of an indefatigable worker and an upright and honourable man.

Edmond About, in his book "Le Fellah," written in 1869, has painted a vivid and lifelike portrait of Mariette, whom he met at the inauguration of the Suez Canal, and the concluding paragraph of his description is remarkable, inasmuch as it is already proposed to raise a statue to him in his native town.

"He is," says About, "one of the most finished men in the world; learned as a Benedictine monk; brave as a Zouave; patient as a copper-plate engraver; natural and kind as a child, although he flies in a rage at everything; unfortunate as few are, and gay as nobody is now; burned as if at a slow fire by tropical heat, and wounded most cruelly by those most dear to him; wretchedly paid; almost poor in a position in which much is expected of him, regarded with suspicion by those in power, and by the people, who do not understand him, and who look upon science as a European superfluity; warmly attached in spite of everything to that mysterious country which he has probed now for nearly twenty years to extract all its secrets; upright and sensitive to an extent that appears to be ridiculous; an obstinate curator of the museum he has formed, and which but few visit; publisher of ruinous books which posterity will perhaps buy for their weight in gold, but which now solicit in vain the encouragement of Government, he is an honour to France, to Egypt, to humanity, and when he has died of despair he will perhaps have a statue."

Mariette was descended from a respectable family, the members of which had distinguished themselves in jurisprudence, in art, and also to a small extent in literature. His great grandfather was a barrister, and is mentioned in the "History of the French Protestants" as having been one of the four jurisconsults who protested against the execution of Calas. His grandfather was an officer in the Royal navy, and a letter is extant addressed to him in England (where he was imprisoned during the Seven Years' War), written by direction of the Duke de Richelieu, informing him of a proposed exchange of prisoners, from which it has been inferred that the duke attached some importance to his services. Mariette's father was born in Paris in 1793; but family affairs led to his removal to Boulogne-sur-Mer, where he was appointed head-clerk to the Mayoralty, and here, in the Rue de la Balance, his second son, François Auguste Ferdinand Mariette, was born on February 11th, 1821.

Young Mariette is described by his contemporaries as having been a fair-complexioned lad, slight in figure, with an animated countenance, and as being full of fun and frolic. He was at first sent to a private school, but on the opening of the Communal school he entered it among the elder boys in the third form. He does not appear to have distinguished himself at school, except in drawing,—an accomplishment which in after years was of great service to him. In his youth he chiefly employed his talents in this direction in the production of caricatures and sketches of animals. On the walls of the old Communal school at Boulogne are some admirable geographical maps, drawn by Mariette, which show his skill and boldness of handling.

In 1837 Mariette obtained a first-class prize in geometry, a prize in physics and chemistry, and in literature a prize for Greek version and an *accessit* in Latin, English, and history. At the conclusion of his school studies he assisted his father at the Mayoralty from 1837 to 1839. In the course of this latter year he obtained the appointment of French master and teacher of drawing in a school kept by a Mr. Parker, at Stratford, where he remained until 1840, when he removed to Coventry, and endeavoured to obtain a living by designing for ribbon manufacturers, but finding that this branch of industry was miserably paid, he returned to his native country, with the intention of resuming his classic studies.

At the end of six months he was ready for his examination, which he passed at the March session, 1841, at Douai. He took his degree as Bachelor of Arts, with honourable mention, and resolved to devote himself to teaching. A short time afterwards we find him at the Communal school in his native town, first as a monitor and then as French master (with a salary of 56*l.* a year), and finally as *régent dans la classe de septième*, or assistant master (1841-43).

About this time Mariette's literary talents began to develop themselves, and he commenced by contributing occasional essays, mostly of a topographical character, to the local newspapers. These early efforts, of most of which a record has been kept by his biographer, are described as showing great originality of treatment, and giving signs of promise which were afterwards fulfilled, not, however in the manner which was anticipated.

An event which occurred in 1841 decided Mariette's future vocation. This event was the death of Nestor Lhote, the companion of Champollion, which occurred in that year, and Mariette, who was cousin of the deceased, was entrusted with the duty of putting his papers in order. The examination of these manuscripts by him fixed at once the bent of his inclination, and he became from that time an enthusiastic student of Egyptian antiquity. He was assiduous in his attendance at the Museum of Boulogne, which contains a respectable collection of Egyptian antiquities, part of the spoils of Napoleon's celebrated campaign, and diligently sought to penetrate the secret of the hieroglyphics without any other master than his own untiring patience, and sustained by an enthusiasm which rose to the height of the heroic.

Among the works projected by Mariette was a history of the Boulogne pirates, towards which he had collected a considerable amount of materials, but its completion appears to have been prevented by a taunting allusion in an opposition journal to the precautions he had taken, in the portions already published, to avoid wounding the susceptibilities of the English nation. This reproach, if deserved, will not tend to lessen our admiration for the character of M. Mariette, who at a time when the relations between France and England were somewhat strained, appears to have risen above petty international jealousies.

In 1843 Mariette became editor of *l'Annotateur*, a Boulogne paper. He did not, however, relinquish his position at the Communal school, and in addition he gave private lessons. In June, 1845, he married the sister of one of his pupils, Mdlle. Eléonore Million. Notwithstanding his numerous occupations, he found time to interest himself in local affairs, and was an active member of the local committee for primary education, secretary of the Agricultural Societies, a member of the Friends of Art, &c.

In 1846 he resigned the editorship of *l'Annotateur*, alleging that he found it impossible, from his numerous engagements, to devote that attention to the newspaper which he considered due. He employed the time thus gained in writing a letter to M. Bouillet on his article upon Boulogne in his "Dictionnaire Universel d'Histoire et de Geographie"; a second letter upon the incursions of the Normans; and some contributions towards a history of Wissant. In March, 1847, he published a "Catalogue of the Egyptian Antiquities of the Museum of Boulogne," a small octavo pamphlet of nineteen pages, the first-fruits of his studies in Egyptology.

In 1849, Mariette attracted the notice of M. Ch. Lenormant, the curator of antiquities of the National Library, and professor of archæology at the College of France, by means of a pamphlet on the inscription on the left side of the Hall of the Ancestors of Thothmes III., which Mariette sent him in manuscript. Mariette went to Paris and obtained an appointment as assistant in compiling the catalogue of Egyptian antiquities at the Louvre, at a salary of 2,400 francs (96*l.*).

While engaged on the catalogue of the Louvre he still pursued his studies and wrote a memoir (not published) on Coptic bibliography, and a note upon a fragment of the royal papyrus of Turin, published in the *Revue Archéologique* in 1849.

The memoir on Coptic bibliography obtained for him a scientific mission from the French Government, by which he was directed "to explore all the convents of Egypt, and principally those of the Thébaïde, which contain libraries of Coptic, Syriac, Arabic, and Ethiopian manuscripts, with the object of forming a collection of Oriental manuscripts relating to the history and antiquity of Christian Egypt."

To conclude, in the words of Mariette's friend and biographer of his early years, "The 4th of September, 1850, arrived, and he started. It was soon seen that, from his stature, his strength, and moral force, he was the man to accomplish his difficult mission. His mission, did I say? He went beyond it; for, sent to collect manuscripts already carried off by an unscrupulous Englishman, he discovered temples,—the Serapeum and the ruins of ancient Memphis. Then he will assist to reconstruct in fancy the cities of Heliopolis, Abydos, Thebes, Sakarah, Karnak, Denderah, Gebel, Barkal,—tombs of a buried civilisation. Then he will found the French School of Egyptology, the Egyptian Institute, the Museum of Boulak, where, after his death on the 18th of January, 1881, his body will be transported in a magnificent casket, a sarcophagus of the thirteenth dynasty, selected by himself for that purpose, to remain for ever in the midst of those archæological treasures he had exhumed from the sands of the valley of the Nile, and to attest the French origin of the museum which he had created." J. H.

REMARKS ON THE POSTURE OF STATUES.

That is after all but a hybrid statue which has its origin partly in delineation from a portrait taken from life, and partly from the imagination of the artificer. Thus any full-length representation of Shakspeare is partly realistic, partly fanciful, because there is no record of the poet's whole figure extant; all of his likeness that has been handed down to us is his bust, and when an artist takes upon him to put a body and legs to this bust, the nether part of the figure he concocts is entirely fanciful, and no more authentic than a mermaid's tail.

No stereotyped attitude should be introduced into the statue of a special individual. The attitude should be peculiar to, and characteristic of, the individual portrayed. It is requisite that the artist, as well as the historian, should curiously observe wherein one man differs from his fellow men as well in small as in principal points; but the large leading characteristics ought to be attended to in the first place. The artist who gives us a fair representation of these may be pardoned should he neglect some trifling detail; but he who bestows all his attention on small details to the neglect of leading characteristics offends seriously. It is possible to make too much of Cromwell's mole.

Oliver Wendell Holmes has a sentence in one of his books which is pertinent. Looking back to the period of his childhood, he says he could recall the image of many posturing friends. The sculptor should strive to catch glimpses of

his subjects, as Professor Holmes recalled the image of his departed relatives,—as posturing friends,—every one with his own individual and special postures. It is not every one who has the eye to catch up at once and in whole what may be termed the trigonometry of the individual human form. Not every one is a Tobias Smollett,—able to take note of the attire, the projection, the rake of each figure he observes, at a glance. Yet without some such ability, natural or acquired, how is the artist to produce correct portraits, whether on canvas or in marble? As Sallust, in his writings, has portrayed his characters in the height of their passions, unreduced, unaneled,—with all the prejudices, propensities, proclivities,—encrusted thick upon them, and has disclosed to view all the idiosyncrasies of their inner man,—so should the sculptor, when producing a statue, strive to present us with a verisimilitude of the outer man for our contemplation. In waxworks, the posture of the figures is often studied and stiff, and this detracts from the interest of the statues, for as they are generally appropriately, picturesquely, and splendidly dressed, one finds that the greater number of the spectators are taken up with observing the minutiæ of their clothing, and are indifferent to the bearing and contour of the figures. Yet when they meet with the likeness in *facsimile* of some object whom they know, how warm is the expression of their approbation,—perhaps the model of a blind beggar of the town pulled along by his faithful dog attracts their eye,—this group delights them, because they recognise in it the very counterpart and image of that man and that dog which are familiar to them.

A statue is the counterpart of the quick body, and should be life-like; but too often the sculptor makes it stiff, stony, and like a figure from which life had departed. It is by the deed implied in the posture of the statue that the life-like impression can best be conveyed to the mind. The man should, so to speak, be arrested in the very act and turned to bronze or porphyry. Those statues will always be most attractive which present their subject not in repose, not resting from work, not sitting in a studied attitude as if expecting that their portrait is about to be taken, but in the heat of labour, and engaged in some customary or representative movement,—the general leading on his troops to battle; the poet beating the heaven-born flame; the mechanic employed with his tools; the musician playing on his instrument; the physician bending over his patient; the preacher exhorting his people; the king holding out the sceptre of mercy to the prisoner.

The directions given to Flaxman for his statue of William Pitt, designed for the Glasgow Council-chamber, were that the great statesman was to be represented exactly as he stood on the floor of the House of Commons when addressing the House. How well Flaxman carried out his instructions can yet be seen.

We find, frequently, attempts made to depict the figures of men performing deeds in which the men themselves are not usually nor likely to be often engaged, and in which it cannot readily be known whether the model is rightly posed or not, and, therefore, in which it is difficult to decide whether the form of the figure which has been attained to is twisted or even. In many statues it seems to us that the human form is contorted quite unnecessarily and unhappily. It is a great matter to have every limb set in its natural position, but it is not the easiest thing in the world in every case to arrive at this destination. In the awkward and forced position of the limbs in some rustic statues, we have one of Lord Chesterfield's observations paraphrased in stone,—"His figure (without being deformed) seems made to disgrace or ridicule the common structure of the human body; his legs and arms are never in the position which, according to the situation of his body, they ought to be in, but constantly employed in committing acts of hostility upon the graces." It is almost incredible after what egregious designs some statues have been modelled; for example, we have it on good authority, that in the case of the stone figure of Tam o'Shanter, kept at Burns's monument, Ayr (in conjunction with that of his equally famous drouthie cronie "Souter Johnnie"), a small attenuated grasshopper of a man sat for the body, in place of a big carter with herculean limbs who sat for the legs.

Every limb should not only be perfect in itself, but it should be in harmony with all the other limbs and parts of the body, and the junction of the limbs with the trunk must be cleanly made, and the flow of the contour ought not to be interrupted by it. The pose is everything in a statue; but how much does not this imply? Not only does it cover an appropriate attitude, but it demands also that no feature or limb should be absent from or indifferent to the sentiment which dominates in it. All parts must tend to enhance the value of the main intent of the figure. The eye must not be distracted and drawn from one point to another, and deluded in the attempt to construe the meaning of the piece. No large or prominent feature should be exaggerated, nor any insignificant feature reduced, but each must be written out to its own proper size and comparative dimension.

Nothing can be more despicable than to trick out and overdeck what is plain and mean in itself. What the sculptor has to do is to look for such graces as his object has, and display them, and not to bestow graces upon it which it has not. There may be small dimples, and nodules, and flutings, which connect and unite in one the prominent parts of the face, the development of which may give a fine flavour to the countenance and form the point of its whole illustration. A club-nose can never be a beauty in itself, yet it may have a certain comeliness when blended with corresponding, complementary features, well expressed; and it is the business of the artist to discover and disclose such a harmony as this will be, wherever it exists. It is evident that, owing to the usages of the ancients, their necks were more powerful in marking expression than is the case among civilised people now-a-days; but now in modern days, just as in ancient times, upon the neck depends the distinct and distinguishing carriage of the head. And if the character of the figure can be heightened by bestowing attention on the bearing and contour of the neck, assuredly it ought not to be neglected. The artist must search diligently for the hidden treasures of the whole bust, and bring them to sight. He must turn the light of his lanthorn upon it; pass it carefully over it, and discover where beauty lurks. There may be a lovely shell in the convolutions of an ear; there may be a pretty circular bias in the wave of a nostril, which is well worth being carefully noted and copied out. As a little tick placed at the beginning and the end of a sentence decides the question of its orginality, so may the turning up or the drawing down of the ends of an eyebrow or the wicks of a mouth make all the difference between the bestowal of the air of reality by which a likeness is at once recognisable, or the withholding of it.

Sculptors have each and all their own opinion with regard to the draping of statues, and it is hazardous to speak on the matter. Loose, flowing drapery, which is so often preferred and employed, makes some men look as grand as Roman senators, but it makes others look as if they were in a barber's shop prepared to get their hair cut. Every man looks most natural in the clothes he is accustomed to wear, and it is in such that we would have the sculptor model his people. Some costumes are condemned as being wanting for purposes of artistic effect. We do not think that almost any dress of any period in which people conducted their business and wrought their work, could ever altogether conceal the existence of a goodly form underneath it. The grace of feminine beauty and the spring of manly strength will show through any garb that people can freely move in. And as for those who shrink away in their clothes, and seem to strive to hide themselves behind their own shirt-collar,—they will certainly appear most at home in the clothes they have been in the habit of wearing,—and to put them into loose drapery or strange clothes, however fine, would simply be to hide them from view altogether. Let all celebrated persons be transmitted to posterity as they appeared to their contemporaries,—not in fanciful masques in which nobody would recognise them,—and in which they were not in the habit of appearing.

The classical, when reduced to its least common measure, is the appropriate and the becoming. If a monarch dresses himself unbecomingly, and without reference to his social status, it is impossible to picture him in classic shape. His usual attire and make-up are not classical; and to represent him in classical robes, and made up like a classical form, would be to perpetrate a caricature. Carlyle complains that, in all the portraits, except one, his hero Frederick the Great is represented with a common air, and is given the look of a head drill-sergeant rather than that of a *grand monarque*. The truth is that Frederick acted very much the part of a head drill-sergeant, and dressed shabbily beneath his rank, and accordingly was painted correctly just as he stood; besides, what could be expected of the portraits of a king who, as Carlyle himself informs us, was naturally inclined to be dirty, and who also, as Wraxhall tells us further, pulled on his boots in bed?

The artist ought, nevertheless, to seek out and display the best points, even of a sorry figure. As a fine woman knows exactly how much of her charms to expose to view in order to excite admiration, so should the sculptor study the contour of his subject, and make his drapery disclose and bring out all its good points. He must also make the display, as she does or ought to do, in attitudes which are apparently unstudied, and with what is termed unconscious ease.

Let not the young artist forsake the beaten track of his profession in search of too many novelties. If he attempts dispensing with the routine and customs of his profession, to strike out a new path for himself, and pretends to copy no one, but aspires to be entirely original, he is sure to make a splendid muddle of it, and to bring forth an illustrious piece of disorder. He is to conceive, indeed, but it must be naturally and rationally, as other efficient men in the same line have conceived before him,—not monstrously and absurdly as his own heady inclination would lead him to do. To be successful he must betake himself to the highways and not the byways of his art.

In addition to this, he must be watchful to avoid slovenliness on the one hand and stiffness on the other. When labouring to bring up his surface to the roundness and smoothness of a flute he is apt to make his work stiff. On the other hand, if he tries to avoid this, in order that he may appear easy, he is not without temptation to become slovenly. He must try to steer clear of both of these disturbing pitfalls. Of the two blemishes, stiffness is the more likely to be overcome by constant practice. Slovenliness rather grows on one. How often have we not seen that the inferior and less noticeable parts of a statue, instead of being carefully and artistically wrought out, have been knocked off skimble-skamble, — have been settled as much by chance as by design. Wherever there is either imperfect conception or careless execution the work is deteriorated, and the value of the piece is detracted from; this may not be evident when the statue is first uncovered, but it will become only too plainly apparent so soon as it has lost the gloss of newness and has got worn a little.

Slovenliness may be shown in three ways. There is sometimes slovenliness in arranging the model,—this may be passed off as natural ease and truthfulness to life; sometimes in the execution of the work an attempt may be made to pass this off under the style of "working in rough," and sometimes in finish this last may very readily be passed off under the name of "boldness of touch," but any of the three acts of slovenliness will mar the statue.

If there is an art in which perfection is required,—and nothing short of perfection suffices,—that art is sculpture. When a statue is finished it should look as if it had never been touched by human hand, but had sprung into existence complete as it stands. It is not often that one comes into the neighbourhood of a work of art, and when he does it is generally a piece of sculpture, which, in a moment, at the first glimpse, evokes a burst of pure and perfect joyfulness in the heart. Once or twice, however, have we been surprised by coming unawares into the presence and beneath the halo of a sparkling animated form, in white marble, all dripping with grace and light, the dazzling beauty of whose posture shot ethereal fire out of the eyes, and made us happy even in the thought that any such delightsome handiwork of man existed on the earth, fast and safe, and was not a mere dream and illusory. Moreover, we would not class as a work of high art any statue or any piece of sculpture which has no quickening power, which never moves the soul at all, which finds us calm and leaves us calm.

Florence.—The ex-Grand Duke of Tuscany has undertaken, at his sole cost, the restoration of the front of St. Mary of the Flowers at Florence.

SO-CALLED ACOUSTIC POTTERY.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of this Institute on Monday evening last, Professor T. Hayter Lewis, vice-president, in the chair, Mr. Farrer was introduced to the chairman on his attendance for the first time since his election as Honorary Associate, and it was announced by the honorary secretary, Mr. Macvicar Anderson, that Mr. Farrer had kindly undertaken the office of Honorary Solicitor to the Institute, in place of the late Mr Frederick Ouvry, F.S.A., his partner.

Mr. Gordon M. Hills then read a paper on "Earthenware Pots (built into Churches) which have been called 'Acoustic Vases.'" The author said that the assumption that the earthenware vases found built into the walls of several churches, not only in England but in other countries, were used for acoustic purposes was evidently based on a statement made by Vitruvius to the effect, as he (the author) understood it, that there were recesses made under the seats of the theatres, and in each of those recesses was placed a brazen vase with the mouth downwards, but supported at the front edge. Vitruvius remarked that he knew nothing of these vases himself, but that he derived his account of them from an old Greek writer. He also expressly said that there were none of these vases used in the Roman theatres. In the year 1861 the ancient monastery of the Celestins at Metz was pulled down by the French engineers. The author said he apprehended that no earthenware pots were found built into the walls, because the Metz archæologists made no mention of them. But the pulling down of the monastery led to a German archæologist taking up the study of the history of the monastery, and in the course of his investigations he discovered that one of the monks, under the date 1432, had recorded that in that year the Prior Ode le Roy introduced into the church of the monastery an arrangement of acoustic vases, having been greatly struck with the good effect of such a device in another church. A marginal note, attributed to the chronicler, said "Ecce risu digna." The Abbé St. Leger's work (1665), entitled "L'Apocalypse de Meliton," gave this instance of the neglect of their duties by the religious orders,—"Of fifty singing men that the public maintain in such and such a church, there are sometimes not more than six present at a service; the choirs are so fitted with jars in the vaults and in the walls, that six voices there make as much noise as forty elsewhere." A theory tracing such arrangements back to the ancient Chaldeans might be regarded as exploded. As had been shown by the editor of the *Builder* in 1857, the terra-cotta cones discovered by Mr. Loftus were constructive, not acoustic. Examples of acoustic vases belonging to Classic times had been collected by Mr. R. R. Brash. The greater theatre at Hierapytna, in Crete, had at least one row of bronze *echeia* or jars. At Lyttus there were three rows. Like provision seemed to have been made at Saguntum. The ancient theatre at Scythopolis, in Syria, had seven recesses for *echeia*, in the position indicated by Vitruvius, and like arrangements had been found in a theatre at Arizani, in Asia Minor. Coming to Mediæval examples of so-called acoustic vases, Mr. Hills remarked that they had all been found solidly built into walls,—a departure from the Vitruvian doctrine, suggesting a different purpose. Beginning with Continental instances, M. Stassoff, editor of the official archæological journal of St. Petersburg, was cited to prove that acoustic pottery had been found in a great many ancient Byzantine or Græco-Russian churches in his country. For Sweden and Norway, M. Mandelgren, a Swedish architect, claimed a pretty considerable number of churches furnished with earthenware pots built into the walls and vaults, with their orifices turned towards the interior of the building. One example cited by Mandelgren was the Church at Bjeresjoë, a small vaulted structure very much resembling Kilpeck Church, Herefordshire. Passing on to France, where the evidence seemed wholly negative as to the survival of any fragment or trace of the pots put up by Ode le Roy in the Church of the Celestins at Metz, Mr. Hills said it was in April, 1842, at the Church of St. Blaize, at Arles, that the first modern French discovery of earthenware pots built into the walls was found. Of this a detailed description was given, after M. Didron, who called the pots found "cornets" of baked earth, and "pots acoustiques." They were shaped like the horns used by French herdsmen. The so-called acoustic pottery had also been found at Aberbrach, in Brittany, St. Martin, Augers, and Clisson. In Switzerland it was commonly said that numerous examples of acoustic pottery in walls were known. A few particulars were cited from Mr. Albert Way, F.S.A., and Dr. Keller, President of the Society of Antiquaries at Geneva. Crossing over from the Continent, Mr. Hills found one Irish and a few English instances, on all of which he dwelt. The Irish discovery was at the fine old collegiate church of St. Mary's, Youghal. The English finds of pottery built into church-walls were next spoken of in order, from the earliest at Fairwell, in Staffordshire, in 1771, to the latest, in 1878, at Leeds Church, near Maidstone. This last Mr. Hills elaborately described from personal examination of the site and all the architectural features and facts. Examples discovered between these dates were the pots found in the churches of St. Nicholas, Ipswich, where the discovery was made in the course of repairs going on about 1848–9; St. Peter Mancroft, Norwich, in 1852 (described and illustrated in the *Builder* for 1863, p. 893, by Mr. Makilwaine Phipson, to whom Mr. Hills expressed his indebtedness for much information); Fountains Abbey, Yorkshire, in 1854; St. Peter Mountergate, Norwich, in 1860; St. Olave, Chichester, in 1851; Upton, near Southwell, Notts, in 1863; Denford, Northamptonshire, in 1864 (illustrated in the *Builder* for 1864, p. 953); St. Clement, Sandwich, Kent, in 1869; East Harling, Norfolk, in 1872. In conclusion, Mr. Hills spoke as to the purpose of the embedded jars, reviewing the evidence for and against the acoustic theory, but inclining to agree on the whole with M. Didron, who deemed such an acoustic device quite childish, if not with the Metz chronicler's derisive judgment, "Ecce risu digna!"

In the discussion which followed,

Mr. Loftus Brock, F.S.A., said the subject was one of great archæological interest. He thought it to be unquestionable that, rightly or wrongly, the earthenware vessels which had been found built-in in the walls of Mediæval buildings were intended by those who placed them there to serve some acoustical purpose. Most of the articles of pottery that were found did not seem to have been made for the purpose: they were the ordinary culinary vessels of the periods in which they were built in. It was noteworthy that so many specimens of earthenware vessels had been found in the walls of Norfolk and Suffolk churches. Possibly it would be found that the insertion of a few earthenware pots in the west wall of a modern church would effectually stop the echo which was so often found. An early volume of the *Builder* contained an account of the checking of a great echo in St. John's Cathedral, Antigua, by placing a screen of perforated boarding at the west end of the nave. He had in his own experience found similar expedients to be effectual in attaining the same end, and therefore it was possible that there might be a practical outcome to the interesting archæological paper which had been read.

Mr. Joseph Clarke said that most of the earthenware vessels discovered during the restoration of St. Clement's Church, Sandwich, were filled with mortar.

Mr. Thomas Blashill said that not only vessels of pottery, but the skulls of horses, had been used in buildings with the view of improving the acoustic properties of a building. The skull of the horse was exceedingly cavernous, and therefore appeared to be well adapted to serve the same purpose as that which was intended to be fulfilled by the hollow earthenware vessels. Just thirty years ago he was at a large meeting at an inn in a place called Portway, a few miles west of Hereford. On that occasion the landlord stated that the floor of the room in which they were assembled was laid on horses' skulls, with a view, as he said, to improve the sound of the fiddle, the room being used at times for dancing. A few years ago, when he was in the neighbourhood, the inn was being altered and pulled about, and the workmen having come upon these skulls (which were, he understood, found to be secured in three rows to the under side of the floor by screws), they had decorated the top of each of the scaffold-poles with a skull. Unless he was mistaken, a similar use had been found to have been made of horses' skulls in Lancashire.

Mr. Arthur Cates, in proposing a vote of thanks to Mr. Hills for his interesting paper, said that besides the openings found in the theatres at Saguntum and elsewhere, there was another curious instance which might serve to throw some light upon the principles which guided the Swedish architect who devised the vault of the church at Bjeresjoë with its five rows of vases, one row being along the apex. In one of the early editions of Terence, there was a sort of introductory notice by a commentator, who mentioned the use of vases of brass for the purpose of increasing the sound. He wrote: "In certain temples of antiquity which have come down to our time, there are, at the foot of the vaults and at the upper part, rows of cavities in which brazen vessels were placed, with the mouth turned outwards, which served to increase the distinctness and the melody of the voices of those who sang within the temple."

Mr. Charles Fowler said that Mr. Hills had not mentioned any pre-Roman examples of the use of such vases as were mentioned by Vitruvius for acoustic purposes. One such example occurred to him, however, and that was the theatre at Taormina. When he visited Taormina thirty or forty years ago the acoustic properties of the theatre seemed to be very good, notwithstanding the imperfect state of the building. Some of those present would remember possibly that the late Professor Cockerell intended,—if he did not actually do so,—to apply vases for acoustic purposes, in a concert-room at St. George's Hall, Liverpool, the vases being placed under the seats, which rose one above another as in a Greek theatre.

The Chairman said he thought the vases were placed in the ceiling?

Mr. Fowler said that was the case in the large hall, and the arrangement was due to Mr. Rawlinson, the engineer, but he was referring to a concert-room, of which he remembered seeing Cockerell's working drawings.

Professor Kerr said that in the music of the ancients the scale was different to that which we used. The scale which the ancients used was that furnished by the black notes in our pianofortes, and it produced music in a minor key. It occurred to him that the bells,—for such they really were,—which Vitruvius described, might really have served the purpose for which they were stated to have been used,—that of producing resonance.

Mr. Stannus suggested whether the pots found with perforated bottoms might not have been used for purposes of ventilation.

The Chairman, in closing the discussion, said that a few months ago he was in the ancient theatre at Argos, which was 500 ft. diameter,—the orchestra (the part in which the chorus used to perform) being itself 200 ft. in diameter. He and some friends who were with him tested its acoustic properties, which were found to be remarkably good. In regard to Fountains Abbey, a very good account of the acoustic pottery found there was contained in the reports of Lord de Grey.

Mr. Hills, in acknowledging the vote of thanks accorded to him, said, that whatever might have been the actual result, he believed the Mediæval pots which had been described had really been intended to improve the acoustic properties of the churches in which they were found.

IN AND ABOUT THE TEMPLE.

If Charles Lamb or any other past frequenter and admirer of the Temple could rise from the grave and observe how rapidly its features are changing, he would doubtless regret that its quaint and somewhat sombre characteristics are leaving it. In truth, in few parts of London, considering the space, have the changes recently been greater than in the Temple. At the present time, perhaps, the more noticeable point in connexion with it is the variety of architecture that is to be found there. If variety is charming in architecture, as it is supposed to be in other things, there can be no question that the Temple should excite admiration. For our part, we are somewhat doubtful if so much variety in such close proximity does not spoil the general harmony of character which should be one of the most attractive features of such a place as the Temple. As we all know, there is, first of all, the celebrated church, with its severe and simple Norman and Early English styles; then, close beside it, on the south, is the square and grimy red brick block known as Lamb-buildings; whilst immediately opposite is the new Hall of the Inner Temple, in the Decorated

Gothic style, in grey stone. Joined on to this, and of the same material, is the library of the same Inn, in a more domestic style of Gothic, and still in progress is the new extension to the library, forming a northerly wing and joined to the clock-tower. But here is again a diversity, because this new building is red brick with stone windows and facings, and by no means in the same style as the building of which it is to form a part. But what strikes the observer is that it would have been more productive of architectural harmony if the new addition had been in the same material and more nearly in style an approach to the existing library, and had also been designed so as not to have been overpowered, so to say, by the clock-tower of the library. Opinions may differ, but we give this as a criticism which may be worth consideration, because it is quite clear that building operations in the Temple will not yet cease, and care should be taken to make whatever is erected worthy of so famous a spot. To turn now to another part of the Temple, the late Mr. E. M. Barry's block of buildings known as Temple Gardens, which has its main front to the Embankment, and which is in the style of the Renaissance, florid and elaborate in detail. There can be no question that this is a successful work, regarded from the Embankment; it is a valuable addition to London. But unfortunately it forms an end to the grey pile of Harcourt-buildings, and, seen from the Temple, it dwarfs this block and is quite out of keeping with the rest of the architecture in the Temple. Taken alone, there can be no question about its attractive and handsome character; taken with the rest of the Temple and that part which it joins, there is a distinct sense of incongruity about it. Nor internally is it quite as well planned for the purpose for which it is required as could be desired. The turrets at the corners give spaces which are very odd and almost useless, and many of the rooms are too large for their use. The great desideratum of chambers in the Temple is that they should be moderate in size. When it is remembered that for a fair-sized room on the first floor the rent is about 60*l.* a year, and that large rooms are not of practical utility for a barrister's work, the importance of keeping the rooms of moderate proportions is very great. But the most remarkable thing in the way of building has recently been achieved by the authorities of the Middle Temple. Between the north-western end of the late Mr. Barry's Temple Gardens and the southerly end of a three-storied red brick block known as Plowden-buildings until lately was a small open space. Here, however, has just been erected a small block of buildings in grey stone, in the Perpendicular style, much lower than the so-called Temple Gardens, so that the northerly end wall of the Temple Gardens stands up far above the new block quite naked, so to speak, and dwarfing the new-comer in the most marked way, who looks as if he had dropped from the skies, having no relation to his neighbours either in size or style. The Temple is a spot where the building capabilities are almost unique in London, and it is melancholy to see such want of taste as is exhibited by the erection of the new block. We have criticised Temple Gardens in regard to its want of accord as a single building with the general style of the buildings in the Temple, though we have expressed our admiration of it; but of this new addition no good word can be said. Something, indeed, has been said about certain claims in respect of light to buildings across the roadway, but we cannot think that there would have been any substantial deprivation of light caused by a higher building; nor can we believe that the authorities of the Inner Temple would have so little regard for the beauty of the Temple as to let any narrow feeling of jealousy of the Middle Temple induce them to prevent the erection of a fitting continuation to Mr. Barry's handsome block, even though it might render somewhat less valuable their rooms which front the roadway. Assuming even that their back rooms were somewhat darkened,—though they would not be more gloomy than dozens of other rooms in the Temple,—yet the Temple generally would have gained by the additional stories to the Middle Temple. If any such course, however, has been taken by the Benchers of the Inner Temple, it is another sign that the Inns of Court should be ruled by a representative committee from all ranks of the members, not by a self-elected body of Benchers, who are either too busy to attend properly to their work, or have lost touch of the general feelings of the members generally, and are an age behind the time. Nor have the Middle Temple authorities been happy in Fountain-court. They recently purchased a house or houses fronting on Essex-street, and with the back looking on the well-known fountain of the Temple. In front of this newly-acquired property they have placed a building with a ground-floor only and a flat roof, most common-place in character, thereby losing the opportunity of increasing the general space round the fountain and adding a thing certainly not of beauty, but of ugliness, to the Temple, and exhibiting a want of taste which one might have hoped,—looking to the pecuniary resources of the Temple and the character of the gentlemen who are its guardians,—would have never been allowed, especially as the amount of room gained by this single bit of building is very small.

Connected also with the Temple is another point of practical importance, namely, the necessity of a connexion in the nature of a subway between it and the New Law Courts. The crossing of Fleet-street is a most tedious business at the best of times, and when it will have to be done constantly by lawyers with bags, books, and often with flowing gowns, on wet days, it will be simply an intolerable vexation. It would be perfectly feasible to make a short subway from Middle Temple-lane, and we feel convinced that it is only a question of time. But we would urge that it should be undertaken at once for the purpose of professional and public convenience, and that it should not be postponed till the demand of the lawyers and the public makes it necessary to neglect it no longer. As soon as Fleet-street is widened, as it soon will be, at its commencement, the need will be greater than ever, and the difficulties of the transit increased. Therefore, again we say, let a subway be made at once.

RAILWAY DEVELOPMENT.—NEWHAVEN HARBOUR.

A GREAT WORK IN CONCRETE.

The vast extent to which railways and railway traffic have been developed, within say the last thirty years, would be almost incredible if not attested by official documents of indisputable authority. Mr. James Allport, of the Midland Railway Company, a man of large and accurate railway knowledge and experience, has recently given the public a series of carefully-prepared tables touching the growth of railway traffic. These tables and accompanying letters have appeared in the *Times*. It appears from these that in 1850 the total length of the railways in England and Wales was 4,679 miles; in 1880 it was 12,547 miles. The number of passengers carried at the one period was 58,514,134, and at the other 540,669,175, or nearly tenfold. The receipts from passenger traffic were, in 1850, 5,888,600*l.*; in 1880, the receipts had risen to 20,341,096*l.* The 7,868 miles of additional line, made or opened between 1850 and 1880, involved, of course, many important and costly engineering and structural works in tunnels, cuttings, embankments, viaducts, bridges, station buildings, grand hotels, &c. In the former class are the heavy works on the Settle and Carlisle line of the Midland Company, the direct South-Eastern, *vid* Tunbridge, and many other new lines that might be named. As regards stations and hotels connected with them the period includes the erection throughout, or the remodelling and enlargement of the Charing-cross, Cannon-street, St. Pancras, Liverpool-street, Holborn Viaduct, Waterloo, London Bridge, Euston, and King's-cross stations. Great works in the same direction have also been executed in joint stations, at Carlisle, Leeds, Liverpool, Manchester, Birmingham, and other provincial towns.

The works referred to have been executed, for the greater part, for the accommodation of traffic within the confines of the United Kingdom, but the boldest projects of some of the companies whose lines radiate from London are undertaken with a view to the creation and fostering of an interchange traffic with places beyond these confines. The companies are not content that their termini should be fenced in by the seaboard, and having conveyed their train-loads of passengers or goods to the English ports by their steam-horse, they provide their fleets of marine locomotives to carry their traffic across the North sea, the Straits of Dover, and the English Channel, and to bring thence return freights. The important harbour works of the London and North-Western Company at Holyhead, that were for so many years in progress, are not perhaps quite in this category. The main object for which these great works were undertaken was, we believe, to perfect the company's Irish Express Mail, passenger, goods, and cattle service, now one of the most superb known in any part of the world. The Great Western does also a large Irish carrying trade to and from the fine docks at Milford Haven, but there is no Continental traffic worth mention west from Plymouth or north from the Land's End. The Great Western Company make use of Weymouth to do a large carrying trade with the North-western Provinces of France, and the South-Western Company do the same *vid* Southampton; but the great bulk of the passenger and fast traffic between the south, south-east, and east of England is done by other companies and through other ports, as by the Brighton Company between Littlehampton and Honfleur, but much more extensively between Newhaven and Dieppe. The South-Eastern Company has its ports for departure and arrival at Folkestone and Dover, and is about to have its Port Victoria at the mouth of the Medway. The Chatham Company also uses Dover Harbour, and Queenborough, near the confluence of the Medway with the Thames, on the opposite bank from its new rival, Port Victoria. Turning up the Thames, the enterprising Midland Railway Company, the whilom "Midland Counties," which was extended to London some years ago, has now almost completed its own extensive dock, harbour, and warehouse system, at Blackwall, on a costly property bought from Messrs. Money Wigram & Co., and it is not at all improbable that the company that commenced by doing a little railway traffic between Derby, Leicester, and places at a moderate distance from them, may have ere long its fleet of powerful steamers for Continental traffic. The Great Eastern Company, as is well known, does a very large Continental carrying trade *vid* Harwich.

Obviously the necessity of waiting for the tide must be a great annoyance to passengers, and detrimental to Continental traffic by a line of communication that is handicapped with such necessity. The South-Eastern Company, by the construction of the new pier, of which the Prince of Wales laid the foundation-stone at Folkestone the other day, intends to get quit of this disadvantage; and the Brighton Company is executing the bold and costly project they have in hand at Newhaven, in order that they may be able to take out of port, or bring in, their steam vessels, whether freighted with passengers, "perishable cargo," or both, at any time or state of the tide.

Newhaven is situated at the mouth of the Sussex river Ouse. It has not always had this name, and the river has not always disembogued at that place. In a time long past a violent storm altered the course of the river, which forced out for itself a new channel at the place where it has ever since flowed into the sea. The old channel, some three miles to the east, at or close to Seaford, got completely filled up, and became "Oldhaven," and the new creek became "Newhaven," formerly Meeching. Seaford was at one time a place considered of sufficient importance to have two representatives in the House of Commons, but was shorn of them after the passing of the Reform Bill in 1832. Newhaven increases, and is certain in the future to increase greatly, but Seaford does not necessarily decrease; it is a very pleasant little town, rapidly growing in favour as a place healthy for residence, and as a pleasant summer resort. The spirited directors, general manager, and accomplished staff of the London, Brighton, and South Coast Railway Company have astutely adopted Newhaven as a port through which to interchange French traffic. Notwithstanding the harbour defects, that they are removing with so much energy and enlightened enterprise, the carrying trade of the company, and through the port, keeps largely and continuously increasing. Newhaven is the nearest place to London on the seaboard at which the construction of a good harbour is possible. It, as well as Dieppe, the companion French port, is almost on a straight line drawn from London to Paris, and the route is, in land and water mileage, the shortest between those cities. It would be safe to predict that on the completion of the harbour works the place will become of considerable commercial and maritime importance. The route from Dieppe to Paris is very attractive from its varied beauties.

The "formation" at the *débouchure* of the Ouse at Newhaven is peculiar. A considerable area on the east bank is flat marsh land. On the western bank a spur from the South Downs bends round as a high ridge that terminates abruptly at Barrow Head, close to the mouth of the river, or of the harbour as it is now. The end of the ridge, Castle Hill, is surmounted by a fort, that has on its inner sides an imposing and picturesque feature in its wide and deep moat. An excellent view of the harbour works in progress, and of the harbour, the site of the proposed dock, and of the surrounding country, with Seaford in the middle, and Beachy Head in the boundary distance, is obtained from the Castle Hill. Inland, behind the ridge, there is a considerable area of flat land well adapted for future dock or harbour extension. On this, the west side of the harbour, are the little town of Newhaven; a large timber pond; the bonded warehouses, custom-house, coast-guard station, and various other public and private buildings, the latter including a little hamlet of white huts that have been put up for the men employed on the harbour works and their families. On the opposite side of the harbour are the railway company's wharf, 800 yards long, the railway station, the company's fine hotel,—the London and Paris,—the company's engine and boiler works, with their 80-ton shears on the wharf; and, beyond these, the gasworks, engine-sheds, &c. A very wide swing-bridge, laid with a tramway, crosses the harbour close to Newhaven town. We noticed several sailing and steam vessels of considerable tonnage lying above the bridge in a fine sheet of water.

For the first quarter of the present century Newhaven was quite unworthy, either from width of entrance, depth of water, or for facilities for loading or landing passengers or cargo, to be called a harbour. It was merely a tortuous, narrow, shallow stream, that deposited some of the silt it brought down in its own bed, and, intermittently, sent down a portion to meet the shingle carried along by the tide, with which the silt united to form a bar at the entrance. The flow of the tide that brings the shingle is from the westward. The strongest gales experienced on this part of the coast are from the south-west and west. The rise of the tide, it may be mentioned, is 20 ft. at ordinary spring and 15 ft. at neap tides.

Many attempts have been made to improve the harbour, and eminent engineers have been called in from time to time to advise and report upon the means to be adopted for the purpose. In 1810 Rennie, the engineer, made a survey and reported upon the then existing state of the harbour. At that time, as he reported, there was only a depth of 12 ft. instead of 20 ft. at high-water spring tides, at the entrance to the harbour, and within half a mile from its mouth. He recommended certain works, including the construction of a pier or breakwater, widening and deepening the harbour, erecting wharfs, &c., at an estimated cost of 200,000*l*. No action was taken on his report and recommendations. At that time the management of the harbour was vested in the Upper and Lower Ouse Navigation Commissioners. In 1847 they were superseded by trustees, appointed under an Act passed for the improvement of the harbour. The trustees in their turn, made way under an Act passed in 1878, by which the management was transferred to the Newhaven Harbour and Dock Company that was then formed. If we mistake not, the directorate of the Harbour and Dock Company and of the Brighton Railway Company are pretty much "one concern."*

The harbour improvements, executed prior to 1878, were all in the right direction, and necessary parts of a large, bold, skilful, and complete plan for the enlargement and permanent improvement of the harbour. Such a plan was in that year adopted in its entirety, and the works were entered upon in accordance with the recommendations and designs submitted with a report by Mr. F. D. Banister, engineer-in-chief of the Brighton Railway Company. They are being carried out with great ability and vigour under the superintendence of Mr. A. E. Carey, resident engineer. Mr. Banister states frankly, and with becoming modesty, that his recommendations are almost identical with those made by Mr. Rennie in 1810, and by Sir Robert Peel's Commission in 1844, whose report stated that "Newhaven is a convenient tidal harbour, and may be considerably improved inwardly, as well as by carrying out a breakwater from Barrow Head into a depth of three fathoms at low-water spring tides, by advancing the piers seaward, giving a wider entrance, and dredging the channel between them." These, *inter alia*, are the important works in progress, the breakwater being the most noteworthy of all.

The flow of the tide that bears along the shingle that forms the bar at the mouth of the harbour is, as we have said, from the westward, and on that side of the entrance the breakwater is in progress. In front of the cliff that abruptly ends with Castle Hill there is a considerable stretch of artificially-levelled area that will, in time, be found very valuable for divers uses. This area has been filled in with chalk taken from the cliff; it is faced to the sea by a strong sea-wall of concrete that is about 1,200 ft. long, and stands about 6 ft. above high-water mark, and extends from the western side of the entrance to the harbour to the Fricker rocks; it curves to seaward at the west end, and the breakwater is its continuation. This important work,—the breakwater,—is to be 3,000 ft. long; about 270 yards of it, running direct out to sea, are built, and have withstood successfully many severe storms, including the memorable and terrible tempest of the 14th ultimo, to the full fury of which the structure was exposed, so to say, broadside on. The portion built is nearly straight; when further advanced the work will curve round to the east. The large water-area that will be sheltered by the breakwater, it may be here mentioned, will be dredged to a depth of from 12 ft. to 18 ft. at low water, and will certainly be resorted to as a harbour of refuge for the ships of all nations, there being no other on the south coast between Portland and Dover. Notwithstanding this almost certainly destined use, the harbour and railway companies have not received or been promised any Government subsidy, as is reasonably due to them.

In section, the breakwater has a foundation about 70 ft. wide, and about an average of 20 ft. deep from the bed of the sea to the level of low water. At this level the work is 40 ft. wide, and 30 ft. higher, or about 6 ft. above high water; the width is 30 ft.; but on the weather side a portion of the work is carried up 10 ft. higher. This portion is about 12 ft. wide at the base, and provides an arcaded covered way below and a promenade on the top, fenced on the outer side by strong and sightly iron rails and stanchions. The footway is about 16 ft. above high-water level of ordinary spring tides. The breakwater and sea-wall have a uniform batter of 1 in 8. At the outer end of the work there will be a lighthouse rising from a circular platform, about 18 ft. in diameter; it also will be of concrete, and have a total height of 135 ft. from the foundation at the bed of the sea, or 95 ft. above high-water mark. The arched openings are 6 ft. high in the clear, and 5 ft. 6 in. between the centres of the supporting pillars, that are 18 in. square, and are moulded in boxes close to the place where they are to be set up. They have plain capitals and bases, and are chamfered at the angles with short lengths of arris left at the top and bottom. A smoothly-finished stair, with 12-in. treads and 8-in. risers, conducts to the promenade at the landward end of the breakwater. In this locality the concrete is prepared and carried out to the work in progress by a railway of 16 in. gauge,—Décoville's patent,—with automatic self-acting points, the handy little iron wagons used tipping their contents on either side as may be required. When the work is further advanced the materials will be taken out in a dry state, and will be mixed and wetted nearer the place where the concrete is to be used. The proportions of the concrete are,—one cement, two of sand, and five of gravel. At favourable times for working, nearly 500 tons of cement are used in a week. A large number of samples is taken from the bulk from time to time and carefully tested. The supply delivered is only accepted if the test is successfully borne.

The operations connected with the submarine portion of the breakwater are specially interesting. Different methods have been adopted in the construction of such works; the great breakwaters at Portland, Plymouth, Holyhead, and other places have had the foundations laid upon the *pierre perdue* system, in which an embankment of loose stones is formed from the bed of the sea to low water by throwing in the material from stages erected for the purpose. The bank is allowed time to consolidate, and divers then dress the top and prepare for the deposit of the vast blocks upon which the superstructure is to be reared. Another method has been adopted at Dover, Cherbourg, and other places where large blocks of concrete have been employed for the foundations. In this system the disadvantages encountered have been the difficulty of making and handling under water blocks large and heavy enough to resist heavy seas, the necessity for staging to lower the blocks, and for the employment of divers to place them in position. Mr. Cay, engineer to the Harbour Board of Aberdeen, overcame these difficulties in building a breakwater at that port in 18 ft. of water at low tides; this was done without the use of stages, machinery for swinging the blocks, or the help of divers. The work has for eight years resisted successfully the heavy storms and seas of the north-east coast. Mr. Banister has adopted, with modifications and improvements, the system of Mr. Cay. So far what is practically a ridge of solid concrete 70 ft. wide and from low water level about 20 ft. deep, has been successfully constructed on the bed of the sea and carried out for about 1,000 ft.

Great weight and mass is a necessity in such work, and thoroughness and exactitude are essential in handling concrete. These *desiderata* are secured. As regards weight and mass the foundation-stones of the breakwater, using the term expansively, are 42 ft. long, 8 ft. wide, and 6 ft. deep; each of them weighs about 100 tons, and is worth between 30*l*. and 40*l*. The mixing of such a mass of materials by hand-labour with the necessary degree of rapidity is a difficult feat, and Mr. A. E. Carey, the resident engineer, was stimulated to the invention of a concrete-mixing machine driven by steam; in the production of such a machine he has been signally successful. The concrete-mixing house and machinery are situated near the entrance to the harbour. The proportions are thoroughly mixed by the machine, in a dry state; they are, by another operation, again mixed, with water added, the green unset concrete is next, shot down to the hopper of the steam barge waiting for it in the harbour below. The hopper is lined with canvas, and is of the dimensions above stated, 42 ft. long, 8 ft. wide, and 6 ft. deep. It is a little longer and wider at the bottom than the top to facilitate the discharge of the load. When the hopper is full, the canvas is laced up, and the barge steams out to the end of the breakwater, whence, by signals well understood by the workmen, the barge steams precisely to the place where the next great bagful has to be let down; the folding-doors at the bottom of the hold are opened, and the enormous mass drops into the place waiting for it and adjusts itself, before setting, to the situation. The concrete steam-hopper then returns to the mixing-mill for another load. By the method employed the services of divers and of stages are rendered unnecessary. One of these 100-ton blocks is turned out in about twenty minutes, about twenty-five labourers being employed in the work. The saving in time and labour by the use of the machine is very great, and the work is done more thoroughly and efficiently than it could be by manual labour. Upon the bags of concrete deposited, till they reach to above low water, the superstructure is built in enormous masses of concrete packed into wooden frames tied by iron rods. This work is accomplished to the level of high water in less than the interval between high and low water. The remainder of the structure is then added, about sixteen hours sufficing for the completion of a section. The successive masses are grooved and dovetailed into each other, so that the structure when finished is continuous. The foundation is now laid for more than 200 ft. beyond the point where the workmen are engaged on the superstructure.

Under agreement with the Harbour Company the Brighton Railway Company undertake the

* At a luncheon in the London and Paris Hotel, Newhaven, on the 13th ultimo, Mr. S. Laing, M.P., chairman of the Brighton Railway Company, presiding, The Right Hon. Sir Henry Brand, Speaker of the House of Commons, whose seat at Glynde is in the vicinity, replying to the toast of "The Newhaven Harbour Company" expressed his belief that the harbour had "a great future before it. The key to the strength of the harbour lay in the strength and security of the breakwater. No one who had visited it repeatedly, as he had done during the last eighteen months, could be otherwise than satisfied with it. It had withstood a great many serious storms, and, as far as they could judge, it would be one of the permanent institutions of the country. Having obtained a safe defence to the entrance to the harbour through that breakwater, he had not the slightest hesitation in saying that Newhaven—depending very much on the finances of the railway company—would become the Liverpool of the south; he had no doubt of it himself; it was a question of will on the part of the railway company."

duty of dredging the harbour and the bar, and in this they have constantly at work two powerful dredging machines. One of these delivers into barges that convey the silt to sea. The other is a hopper-dredger, worked by a pair of 35-horse-power engines, and when at sea by twin-screws. It is capable of removing at one trip 500 tons of silt or shingle, and depositing it out at sea; it was built for the company by Messrs. Simons & Co., of Renfrew. During the last half-year 118,600 tons of mud, &c., were removed by the dredgers.

An eastern quay, about 1,650 ft. long, is nearly complete. The two entrance-piers will probably be finished in about twelve months, and the 24-acre dock some time thereafter. The entrance will be widened to 200 ft. For several years past from 500 to 700 men have been employed upon the works, which will not be completed for several years to come. The consumption of timber in the new entrance piers is very great. It is imported from Norway direct in shiploads.

The directors and all concerned may be congratulated upon the energy and success with which these works are being prosecuted. Whether Newhaven will ever be the "Liverpool of the South" remains to be seen; that its harbour has a "great future before it" seems certain."

THE CASTLE HILL, GAINSBOROUGH.

About a mile and a half north of the ancient town of Gainsborough, on the right or east bank of the river Trent, which there divides the counties of Lincoln and Nottingham, the high ground from the east ends in a sort of rounded bluff towards the river, and forms a noticeable feature in a county much of which is exceptionally flat. For about a quarter of a mile or so this ground is occupied by Thonock Park, but at its head, towards the river, it is covered by earthworks of considerable mass and extent, and which, though obscured by trees and brushwood, appear to be tolerably well preserved. The main work, that which occupies the brow and western slope of the hill, is in form concentric, the innermost and highest area being contained within a bank of earth, now about 8ft. high, outside and at the foot of which is a deep and broad ditch, in breadth about 40 ft. and about 20 ft. deep from the top of the bank, and with a counterscarp of about 10 ft.

Near to and outside of this ditch, is a second bank of earth, and beyond it a second ditch, the two being about the same dimensions with the inner works, with a rather lower bank, so as to be commanded from the interior. Beyond this again, but about 30 yards in advance of the second ditch, is a third bank, and beyond this a third ditch, which seems to be the outer defence of the place. The entrance is by a succession of three causeways of earth filling up the ditches, and connected with as many cuttings through the corresponding banks. This entrance is probably original. It is on the south side, and runs nearly directly through the defences, or rather with much less obliquity than is usual in hill camps. So far as could be observed through the brambles the figure of this entrenchment is rudely circular, but this figure seems due rather to the configuration of the ground than to any setting out with regularity. It was evidently intended as a camp, not as a regular dwelling. It has nothing of the character of a Saxon Burh or moated mound, but much more resembles an entrenchment such as the Britons would have thrown up to accommodate a tribe.

It appears, however, that this earthwork is far later than the British period, and the work of invading Danes. For Gainsborough has a history, some of the particulars of which extend to its contiguous villages. Gainsborough was one of the points whence the Danish invaders overran the districts of Lincoln and Nottingham, and whence they ruled the country they had conquered. Early in the eleventh century Sweyn or Swend, son of Harold Blaatand, and king of Denmark, was known and dreaded on the eastern and southern shores of England. His galleys, from the Humber, ascended the Trent, and in 1013 he established his camp at Gainsborough, and there received the submission of the five boroughs, and thence proceeded in his invasion, which speedily became a conquest, of England. His tenure, indeed, was of the briefest, for in February, 1014, he died at Gainsborough, and it was there that his followers hailed his second son, Canute, as his successor in England. Local and very probable tradition attributes to Swend and Canute the formation of the Thonock entrenchment.

Besides this principal earthwork others of a different character are described as existing and connected with it on its upper or eastern side. One is said to be oblong, and tending to the rectangular in figure, and about 150 yards by 50 yards in area. And this is on that account supposed to be Roman. There is also said to be a smaller camp, also rectangular, with a length of 80 yards, but the breadth of which has not been ascertained.

Unfortunately all this ground is carefully fenced and guarded, and has much the aspect of a favourite pheasant preserve, so that the passing traveller has no chance of giving it a proper examination; but it is probable that if the Lincolnshire Society were to make a proper application a careful and correct survey might be laid down of these earthworks, one of which, it may fairly be concluded, is not inferior in interest to any remaining in Britain.

October, 1881. C.

THE "HOMES" OF THE LONDON POOR.

Two inquests held last week illustrate the wretchedness which surrounds the lives of the very poor in London. No doubt many of the worst "rookeries" which existed thirty years ago have been removed, but that much remains to be done in this direction is only too evident to all who have looked into the matter.

The first inquest was held by Dr. Danford Thomas, at the Middlesex Hospital, on the body of Alfred Coombes, aged four months, the son of a music-printer, living at a house in Newman-street, Oxford-street, who was asphyxiated. Evidence was given showing that the parents lived in a wretched room in the basement of the house, sleeping in the same bed with the deceased and another child, a third child also sleeping in the room. Dr. Whitefield, assistant divisional surgeon of police, said that the deceased had died from suffocation, and the death was partially owing to the state of the room in which the parents lived, which was totally unfit for human habitation. The poorer classes were now, he added, a great deal worse off than they were before the metropolitan improvements and the Peabody Trust were carried out. In reference to that trust he could not help saying that it had been worse than useless. The money left by the American philanthropist had been scandalously abused. Instead of finding the poor and needy in the Peabody Buildings, the better class of artisans, earning 2*l*. or 3*l*. per week, were in possession of the rooms. The abject poor, and their ill-clad, half-starved children, still inhabited the styes to be found all over the metropolis, and still generated those pestilent diseases which over and over again claimed their thousands of victims.

The other inquest was held by Mr. Samuel F. Langham, Deputy Coroner for Westminster, at St. Martin's Vestry-hall, Strand, touching the death of William Howard, aged eleven months, lately living with his parents in Hanover-court, Long-acre, who died, it was alleged, from the unhealthy and unsanitary condition of the house. The mother of deceased said that her child had been sickly from its birth. At about seven o'clock in the morning deceased was taken with a fit, and it rallied until ten o'clock, when it had another. She had no time to go for a doctor, but a neighbour went for one. Deceased died in half an hour. The mother said she believed her child had died from the stench that came from the water-closet and yard. She had not made any complaint to the landlord until after the death of the deceased. The water-closet was outside the house, near the window. The cistern was right underneath the window, and near the dust-hole. Night-soil had been put from the closet into the dust-hole. There was no lid on the cistern. Mr. Robt. W. Dunn, a medical gentleman, deposed to having attended the house and finding the child dead, the cause of death being convulsions. Several people in the house complained of the unhealthy state of the place, which smelt of sewage. It made him sick when he entered. The foreman of the jury said that Hanover-court ought to have been shut up long ago. There are officers paid for looking after these fever dens, and they ought to be made to do it. The jury returned a verdict in accordance with the medical testimony, adding that the attention of the medical officer of health should be called to the state of the houses in the court.

The *Daily News*, commenting on this subject, says,—"So long as landlords are allowed to take rent for dwellings which are unfit to be inhabited, so long these abominations will continue to exist. If a tradesman is fined for selling adulterated milk, or bad meat, or unwholesome fish, why is a house-owner permitted to sell unwholesome lodgings with bad domestic arrangements, and water and air full of the foulest adulterations? This question is everywhere asked by those who know a little of the horrors which lie behind the house fronts in many of our streets."

MONUMENT TO COMMEMORATE THE DEFENCE OF PARIS IN 1870.

The piece of sculpture which certainly attracted the most attention in this year's *Salon* was the group by M. Barrias, "The Defence of Paris in 1870," of which we now give a view. M. Barrias obtained the first prize in a competition opened by the municipality for the best group to commemorate the above event. The figure of Paris, grand and vigorous, is represented as a young woman dressed in a military coat, and standing in an attitude of determined defence; in the right hand she holds a sword, while with the left she grasps the national colours, appearing to shield them with her body. At her feet a wounded national guard, reloading his gun, supports himself against her; on the other side, a woman, representing the country mourning, is sitting, with arms crossed, in an attitude of disconsolate grief. The *ensemble* is noble and picturesque. On looking attentively at the face of the wounded National Guard one can see that M. Barrias, with the sentiment of an artist, has intended to honour the memory of the deeply-regretted painter, Henri Regnault, killed while fighting for his country on the fiercely-contested slopes of Montretout.

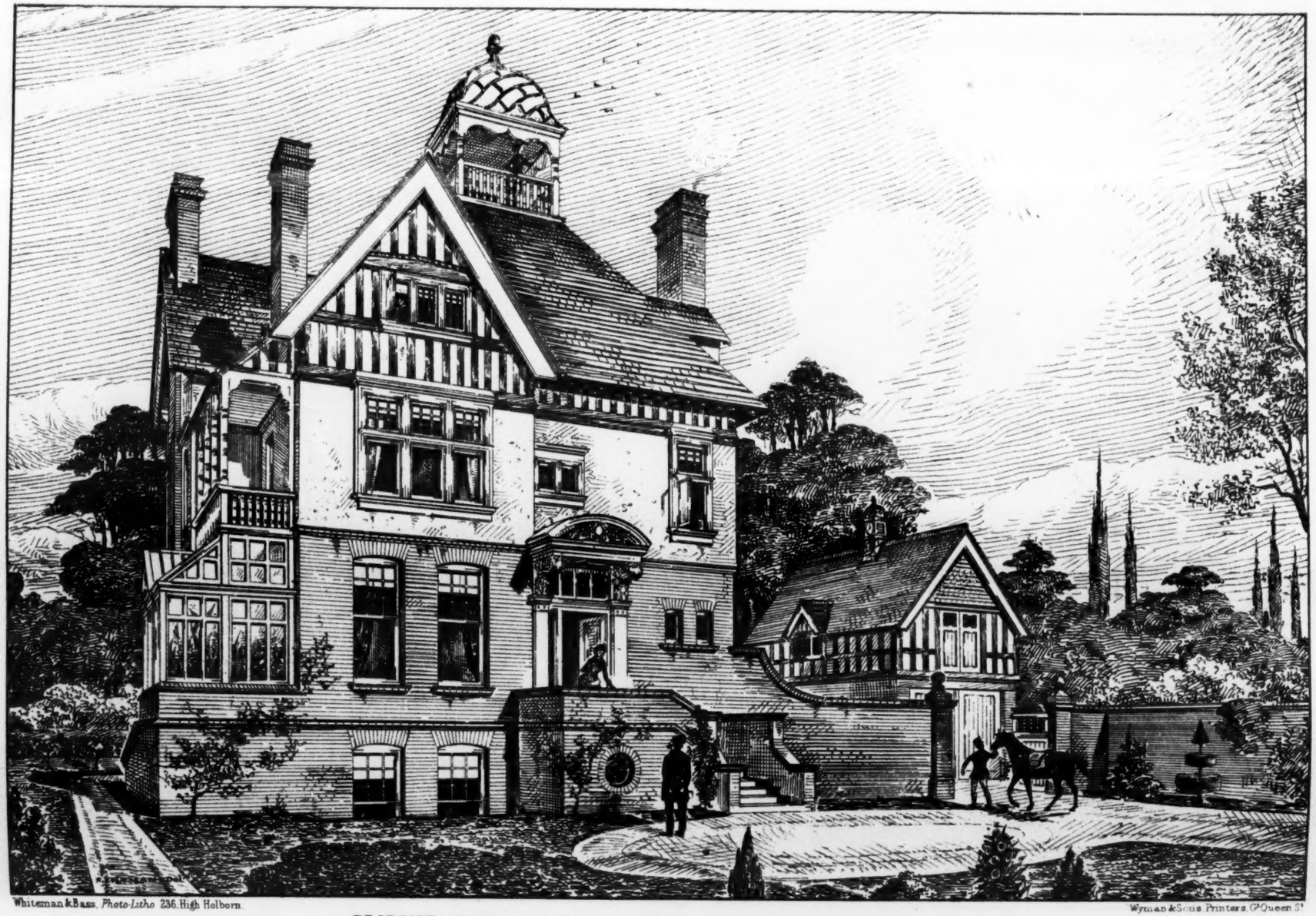
The group will be erected on the Rond-point at Courbevoie, replacing the statue of Napoleon I., which was pulled down and thrown into the Seine on the direful 4th of September. The municipality have not yet decided whether to execute the group in marble or bronze; opinions incline towards the latter.

SALE OF SOUTH METROPOLITAN GAS STOCK.

The gradual introduction of the electric light invests with interest an extensive sale of stock in the South Metropolitan Gas Company, which took place a few days ago at the Auction Mart, Tokenhouse-yard. The property offered comprised 20,000*l*. of the ordinary "C" stock of the company, being the second portion of additional capital authorised to be raised in pursuance of the Company's Act of 1876, and the scheme for the amalgamation with the Phœnix Company. The stock offered was divided into 200 lots of 100*l*. each. Mr. G. A. Wilkinson, of Bucklersbury, who conducted the sale, said a dividend was payable since the price of the company's gas had been reduced to 2s. 10d. per 1,000 ft., adding that it was confidently expected that further reductions in price would take place, resulting in an increase of dividend of 5s. per cent. for every 1d. reduction. The company's reserve fund, which last year was 183,000*l*., amounted now to 190,000*l*., which was a tolerable guarantee for the maintenance of the dividend. He said that the stock would be sold with dividends accruing as from Friday, the 11th inst. The several lots were then submitted, the purchaser of any one lot having the option of taking four more at the same price. The first lot submitted was sold for 195*l*. (the purchaser taking four more lots), which represented a premium of 95 per cent. The next fifteen lots were sold for 194*l*. each, followed by twelve others at 193*l*., and thirty-three succeeding lots at 192*l*., 191*l*., and 190*l*. each respectively. From this point the prices fell gradually from 189*l*. to 181*l*., all the lots being sold. The total proceeds of the sale amounted to 36,355*l*., showing an aggregate premium value of 16,355*l*. or about 82 per cent.

The Chevalier Benedetto Albano is reported to have died in London on the 7th inst., at the age of eighty-five. He converted the old Covent Garden Theatre into an opera-house, and was for some time architect to the Board of Works at Paris and Madrid.

"THE DEFENCE OF PARIS": GROUP BY E. L. BARRIAS, SCULPTOR.



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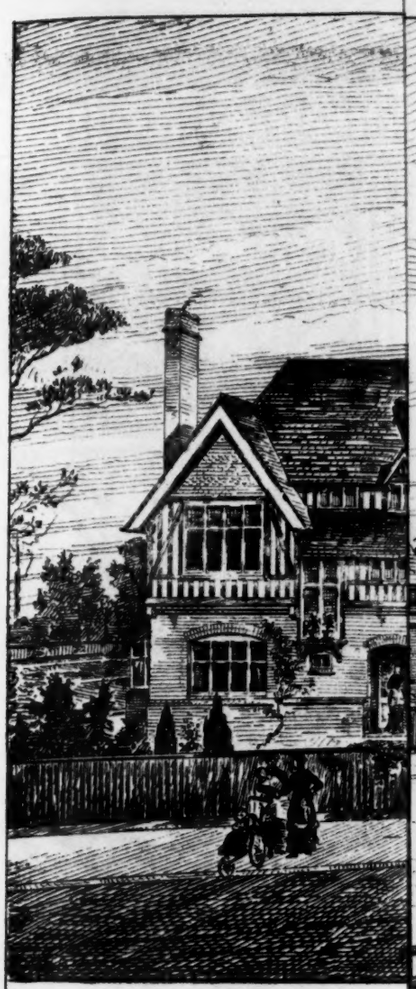
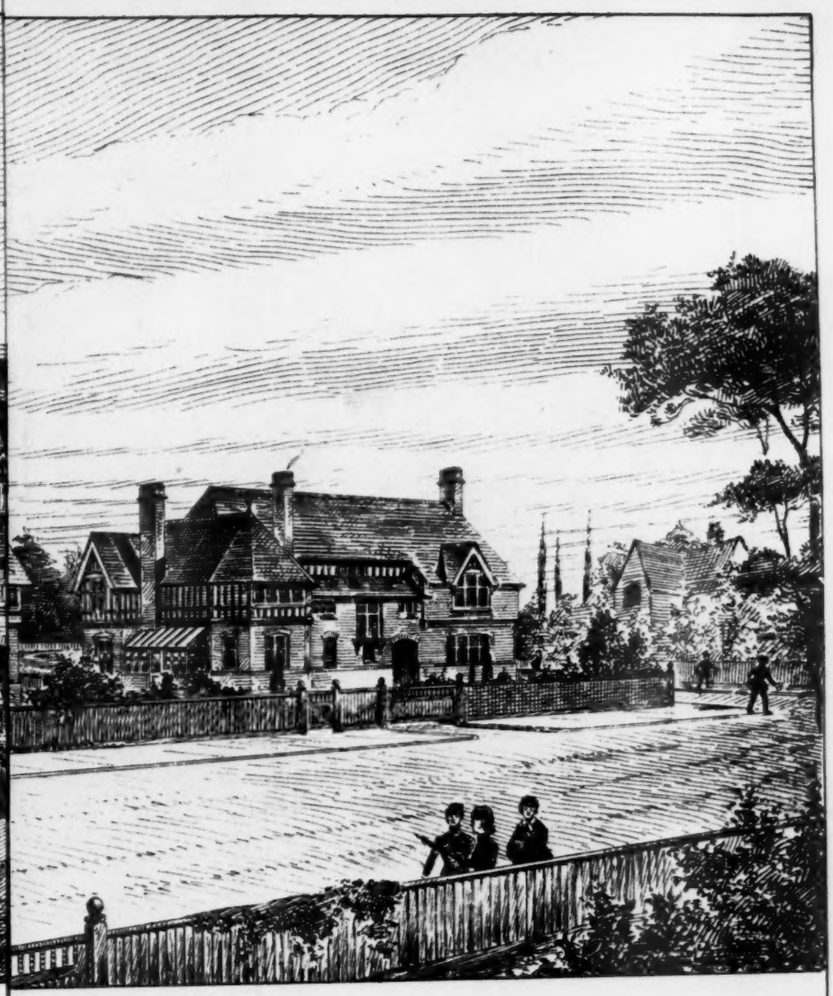
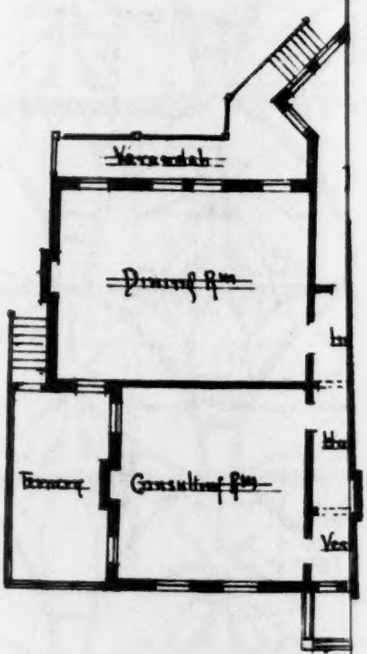
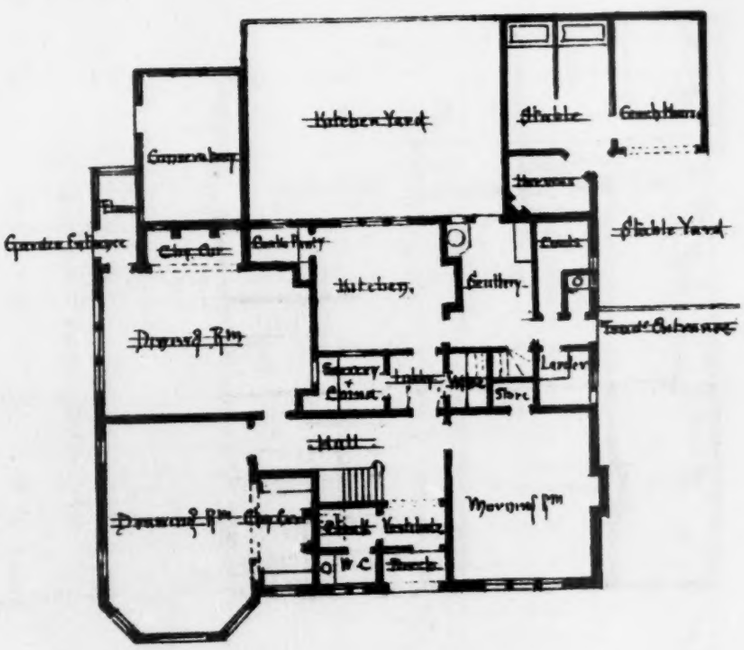
PROPOSED HOUSE, WOODFORD, ESSEX.—Mr. Henry Shaw, Architect.







Ground Floor



Ground Floor

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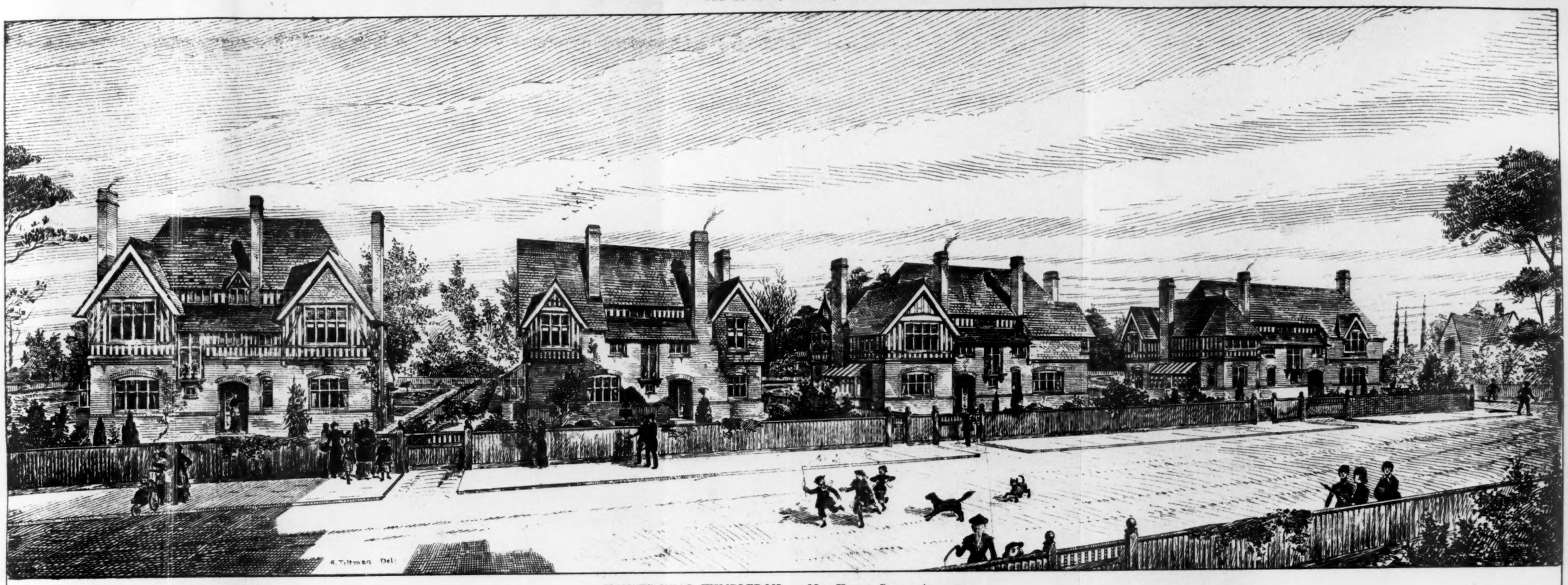
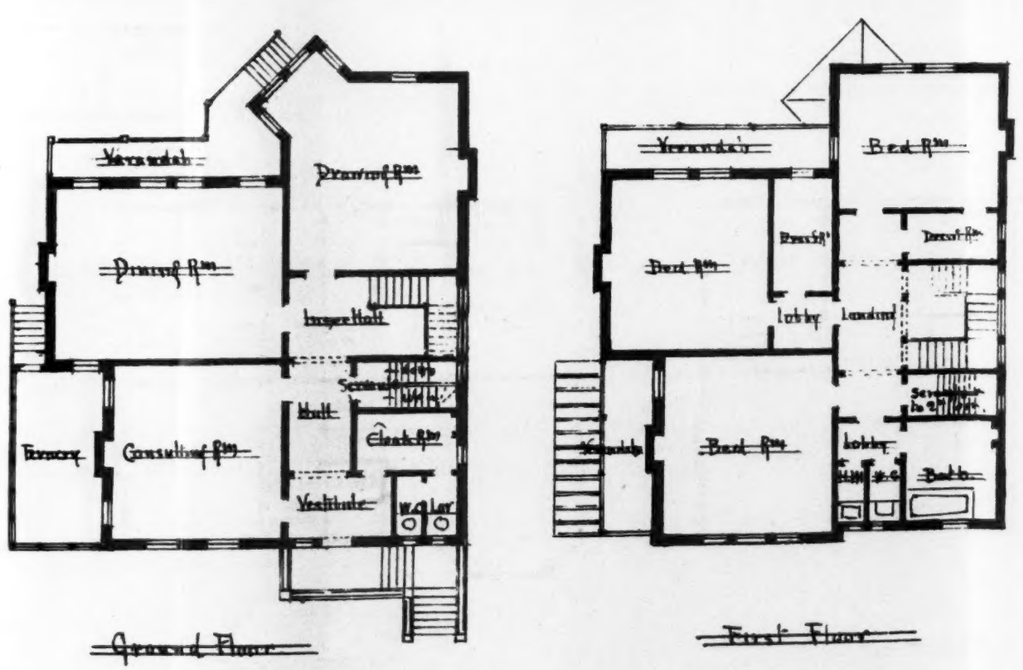
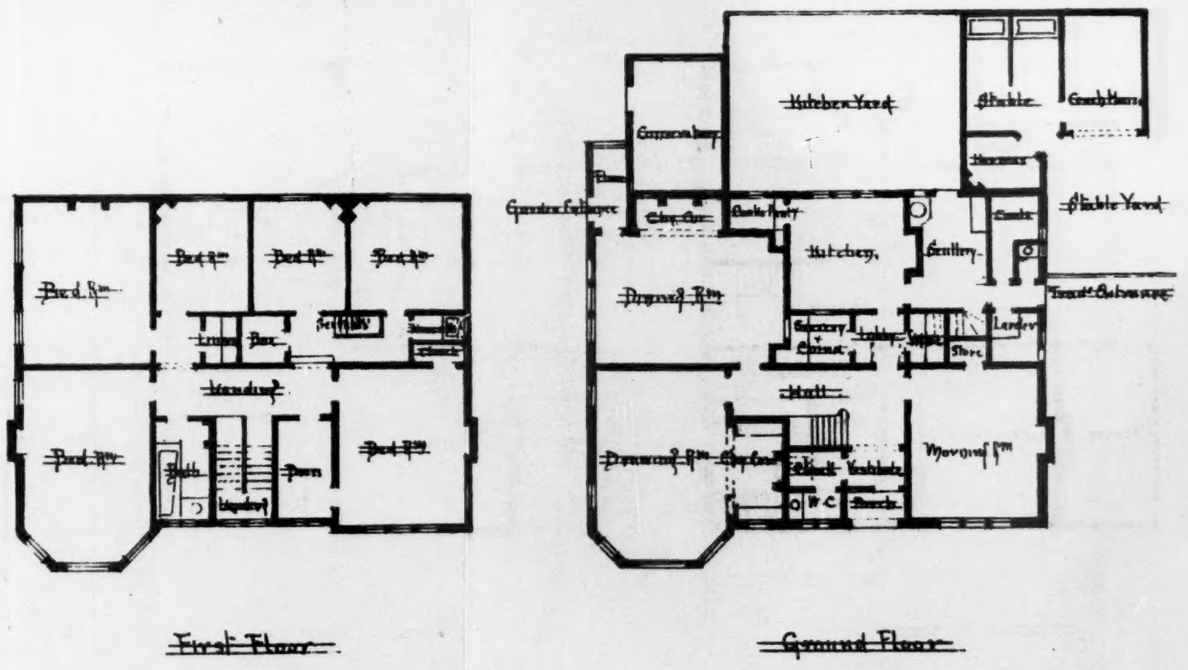


HOUSES NEAR WIMBLEDON.—Mr. Henry Shaw, Architect.



Plans of House at Woodford.



Plans of House near Wimbledon.

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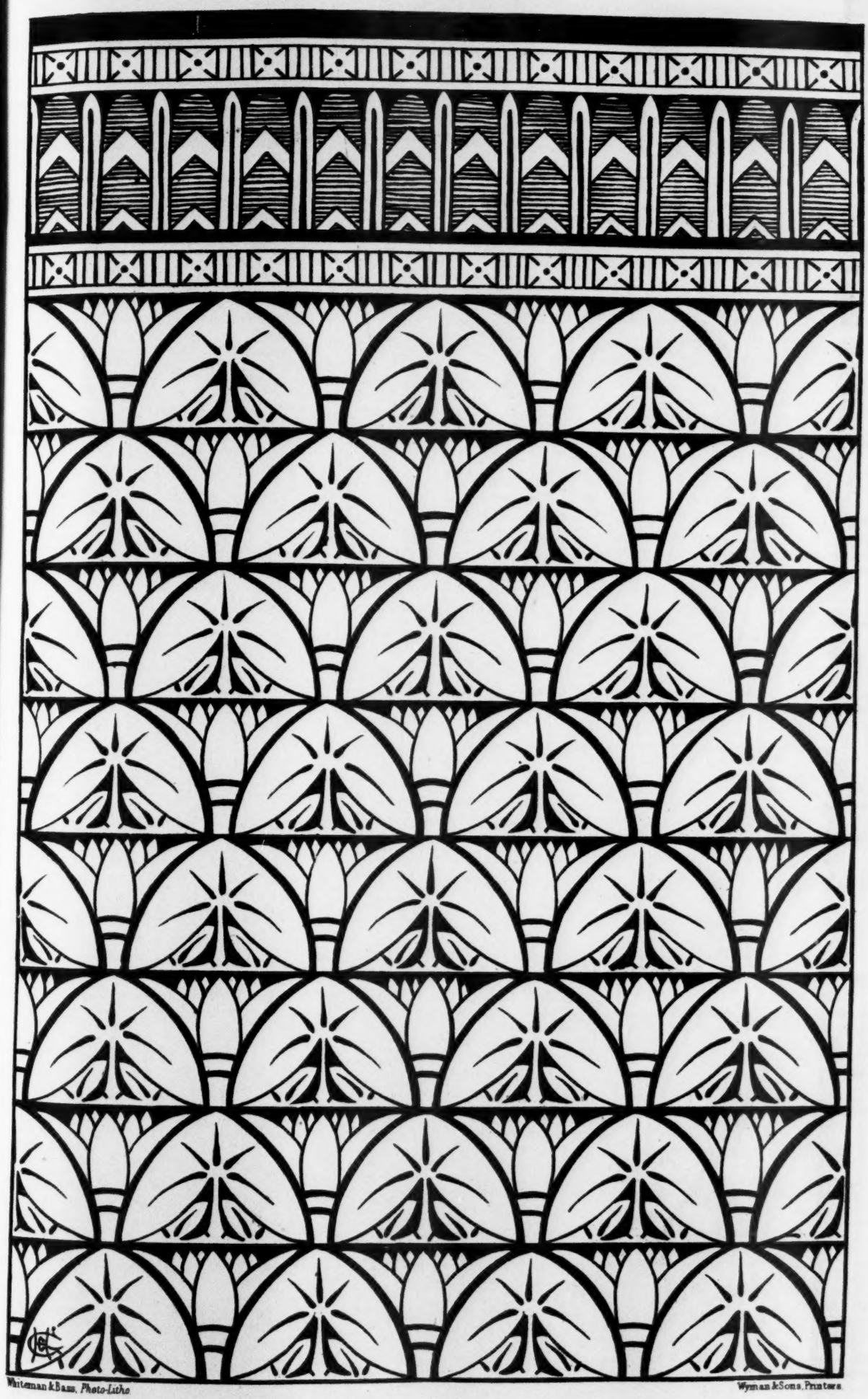

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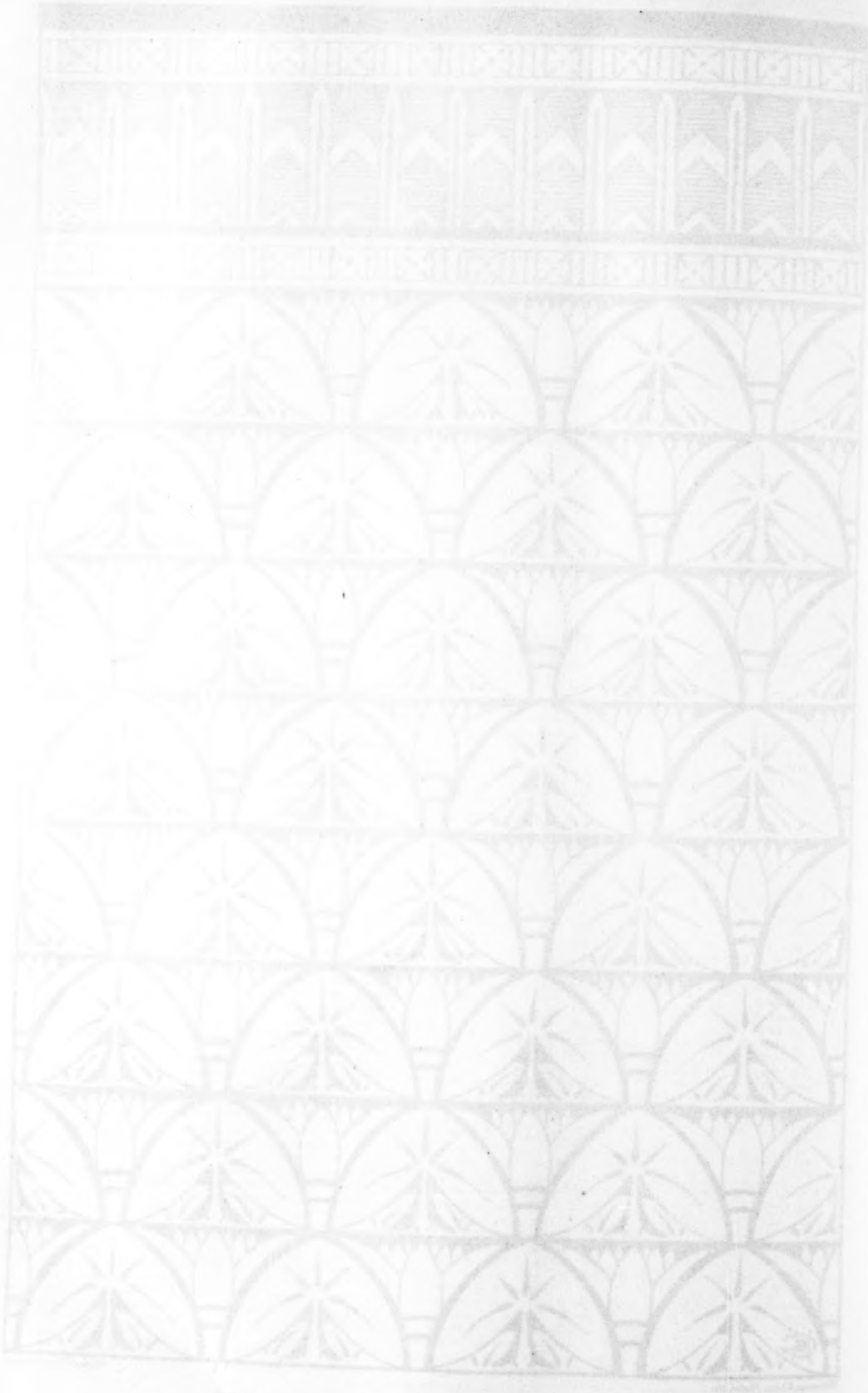
A DADO AND BORDER.—Designed by Geo. C. Haite.



PROPOSED HOUSE, WOODFORD, ESSEX.

This house is about to be erected from the designs of Mr. Henry Shaw, architect, of New Broad-street. The materials to be used are picked stock brick hollow walls, with red brick quoins and dressings up to first floor level; the first floor being in timber and plaster finished rough cast. The upper story in gables and under eaves will be in half-timber work; the whole roofed in with Bridgwater tiles.

HOUSES NEAR WIMBLEDON.

These houses, with slight alterations, are being erected from the designs of Mr. Henry Shaw, architect. Mr. Holloway, of Marmion Works, Lavender-hill, Wandsworth-road, is the contractor. We give a plan of one of them.

DESIGN FOR A DADO AND BORDER.

This design for a dado and border may be described as in the Egyptian style of decoration. It is suitable for printed wall-paper or stencilwork, and would adapt itself readily to any scale required. The lotus flower and leaf selected as the *motif* have been adopted from the lotus-flower so frequently used by the Egyptian painters and sculptors, and to be seen upon their sarcophagi and mummy-cases.

While studying these objects, and examining them for an example of the leaf of the lotus, their favourite flower, the designer was struck by the rarity of its occurrence. Although the flower is used so frequently, the use of the leaf is in comparison exceedingly rare. The best example discovered was pictured as springing from the mouth of a fish. Here there were two leaves, one on either side of a flower. On this example is based the leaf and treatment in this design.

Although a pattern of this kind would look well and complete in a single print, as red or gold on black, yet by the careful introduction of colour, a rich and satisfactory result could be produced. But the colouring of a design of this severe nature would require the most judicious care. It would be by far the best and most safe plan to keep to the Egyptian key of colour, while to ensure a perfectly satisfactory result, the colourist should be conversant with the principal Egyptian colours and the method of their use, or the repose of the pattern,—its greatest virtue,—would be lost. To give a key of colour, as far as words can convey, we should advise the flowers to be in a dull Indian or Venetian red, the smaller petals in a deep brownish ochre, leaves in a dull sage-green, the whole outlined with the background, which should be black, or a very deep brown or red. In the border the same colours might be used a trifle brighter, and a well-broken white introduced. As to its application, it would be best suited for a library, dining-room, passage, entrance-hall, or places of the like description, but its use would necessarily be of a somewhat restricted nature, owing to the severity of its style and treatment.

While speaking of the Egyptian style for decoration, let us say that it is to be regretted that this, the foundation and fountain of all decorative art, should be so little known, and still less appreciated.

A lecture-hall decorated in this style would possess an air of repose and solemnity that no other style or treatment could give.

FULHAM INFIRMARY COMPETITION.

The Guardians have adopted the report of their referee, Mr. H. Currey, and have awarded the first premium (100 guineas) to the design marked "Experience," and the second (50 guineas) to "Simplicity." The authors of No. 1 are Messrs. Giles & Gough, 28, Craven-street, Strand.

The referee, in his report, says the design, "Experience,"—

"Has been carefully worked out. The arrangement is very simple, admitting of easy supervision, and ready communication with the different departments. A straight corridor running the whole length connects the different buildings, which are laid out in what is technically called the pavilion principle. All sanitary requirements have been fully observed. The dimensions of the blocks for the patients have been generally determined by the Instructions, but the size of the administrative department has been left to the discretion of the architects. This appears to me to have been provided on a judiciously ample scale sufficient to meet the requirements of the future extensions, which have been also duly considered."

BUILDING STONES OF SCOTLAND.*

No inquiry can be more interesting or of greater importance to the architect and builder than that respecting the nature of the material which they have to use in the buildings they may be entrusted to design and erect. From the Solway on the south to the Pentland Firth on the north this country is full of a variety of rocks suitable for building purposes, and this is shown by the massive, elegant, and enduring structures of past ages, edifices of so much value both historically and architecturally. When the appliances for quarrying were of the most primitive kind, and the means of conveyance to any distance a work of great difficulty, the architect was forced to adopt a style of building suited to the material nearest at hand; but now, with railways interspersing the country, he is not tied down to any particular stone or material, but may adopt that which he finds best suited for his purpose. What the architect has to look for is a stone that will be durable, strong, and of a colour which will best bring out the architectural features of his design. With the view of noticing stones that have been used in some of the oldest structures before referred to, as well as those of more modern date, I have had cubes of sandstones and granites prepared, so as to bring before the Association in a practical way some information respecting those stones most useful for building; and, to do so, I would begin by noticing the building stone that has been used in our own city. In the older buildings, such as Heriot's Hospital, Holyrood, and the residences of the Old Town erected centuries ago, the supply was drawn from quarries in the immediate vicinity, an example of which is shown in specimen No. 1, taken from the old red sandstone found on the southern side of the town, which has been tested by time, and proved to be of the most durable kind. In the New Town, when quarrying appliances were better understood, other quarries were brought into use, such as Craigleith, Ravelston, and Redhall. These were chiefly used before the canal and railways afforded means of bringing stone from greater distances. Then Binnie and Humbie by the canal, and later on by railway such quarries as Dunmore, Polmaise, and Plean in Stirlingshire, Dalmeny in Linlithgowshire, Fairloans, near Hawick, and the quarries of Lanarkshire, such as Overwood, Giffnock, Auchenlee, and Dalzell, specimens of which are now before you. The respective qualities of the stones I have referred to I will now notice; and taking together Craigleith and Redhall, as occupying the same position geologically (being of the lower sandstones of the carboniferous strata, or perhaps better known as the carboniferous limestone groups) their analysis may be taken as an index of what goes to constitute stone of the most enduring kind, viz.:—

Silica	98·3
Carbonate lime	1·1
Iron and alumina	0·6
	100

To specify examples of these in the city, as affording proof of their durability, I would notice:—1. Craigleith, as shown in the Old University, and many of our finest squares and streets in the northern portion of the New Town, while a notable example, not only of the stone, but of what I consider the best masonry in the city, is the tenement at the northern corner of Randolph Cliff. 2. Redhall.—St. Paul's, in York-place, and St. John's, in Princes-street, as public buildings, are good specimens of this stone as to durability and quality, the carving on them being as sharp now as the day it was chiselled. 3. Humbie and Binnie quarries belong also to the carboniferous limestone group amongst the shales. The Humbie stone was greatly used some thirty-five years ago, and specimens of it are to be found all over the city, but it was abandoned through being unable to compete with other quarries. 4. Binnie may be set down as a stone of the first-class. The first prominent specimen of it was the New Club in Princes-street, built about forty-five years ago, and adjoining it the palatial building of the Life Association of Scotland. The following public buildings were also taken from it, viz.:—Scott's Monument, National Gallery, the Bank of Scotland, British Linen Company's Bank, Commercial Bank, Donaldson's Hospital, and the Post Office. Owing to this quarry being situated among the shale beds, the best fakes are saturated with bitumen, and this is so abundant that I collected a quantity and sent it to the Exhibition of 1851 in the shape of black candles, which the jurists simply noticed in a very short paragraph. Stones that have been extensively used since the advent of railways are those of Dunmore, Polmaise, and Plean. These all belong to the upper part of the carboniferous limestone group, the two former, however, lying above the Plean sandstone. These stones have been greatly used, not only in this city, but in Glasgow, and from Stirling northwards. They are pure sandstones, having a large proportion of silica in their composition. Buildings from Dunmore are the New Post Office, Bank of Scotland, Merchants' House, and Union Bank extension, Glasgow. These stones are preferred for their pleasing colour and durability, while the cheapness of dressing them overcomes the expense of bringing them from such a distance. The Dalmeny stone is of more recent introduction, but perhaps one of the best tests of its durability is that of Dalmeny Chapel, which was no doubt built out of the same strata, so long ago that little or nothing is known of its history except what can be obtained from its architectural character. Another stone in the immediate neighbourhood is that of the Hailes, which has been worked for 200 years at least. This stone, owing to its laminated structure, is used greatly for foundations of buildings, plats, steps, &c. A stone which was used in the renovation of St. Giles's Cathedral about fifty years ago (now being so admirably restored to its original architectural beauty through the munificence of Dr. Chambers and the careful superintendence of Mr. Hay) was taken from a quarry lying to the west of Burntisland, called Callaloe. This quarry was for a long time abandoned, until it was re-opened by the late Mr. Bryce for the erection of Fettes College. The stone is durable, but owing, I believe, to the expense of quarrying and difficulty of dressing, it has not continued in use. Another stone in the same district as the above is that of Grange, which has been long in use, particularly in Leith, and a specimen of which is to be seen in Dalkeith West Parish Church, built about forty years since. This stone belongs to the carboniferous period, below the shale, and about 20 fathoms above the Burdiehouse limestone. In mentioning Burdiehouse I am reminded of the Straiton stone, which lies almost in the same position geologically as the Grange, and Dallachy, in Fife. Another stone which has been brought into Edinburgh, and which is of excellent quality, is that of Fairloans, near Hawick. It is capable of a high polish, and greatly used for monumental purposes. It will be observed from the following analysis it is formed nearly of the same chemical ingredients as Craigleith and Redhall; and this refers also to such quarries as lie in the Bannockburn district, such as Dunmore, Polmaise, and Plean:—

Sand	95·84
Oxide of iron	1·62
Carbonate of lime	1·20
Carbonate of magnesia	0·52
Moisture	0·60
Loss in analysis	0·42
	100·0

Going westwards into Lanarkshire, and treating of stone used largely in Glasgow, as well as brought to this city, the Kenmure Quarries may be first mentioned. They belong to the carboniferous limestone, and lie above the Bishopbriggs coal-beds. They were worked to a great extent for many years, but now, I believe, are abandoned. A section of this rock may be seen at the upper end of the Queen-street Tunnel, Glasgow. Of the best stones, among many others in this county, are Giffnock and Overwood, both near Glasgow; also Auchinlee and Dalzell, and the Wishaw Quarries, all of which are among the upper coals of the coal measures. Among the buildings erected from Giffnock Quarry, in Glasgow are the Academy, *Herald* Office; from Overwood, new Municipal Buildings, Greenock; City of Glasgow Bank, and new Stock Exchange, Charing Cross Hotel, and Clydesdale Bank, Glasgow. Another stone of reddish colour, which lies immediately over the coal measures in the bottom of the new red sand stone, near to Hamilton, is of good quality, and is used extensively in that and the surrounding districts. This stone is exposed in a quarry which may be seen from the Caledonian Railway Glasgow line. Before leaving this country, Bellside Quarry may be noticed. It lies in the true coal formation. Going south and west, we pass through stone strata, both yellow and red

*Read at the meeting of the Edinburgh Architectural Association, 20, George-street, on the 16th of November, by Mr. Gowans.

in colour. Of the latter, the Ballochmyle stone, of which the magnificent viaduct on the South Western Railway is built, is a fair specimen. Further on, we get into the old red sandstones of Dumfriesshire, of which specimens are submitted. To the east there are the yellow sandstones of Langholm Hill, as well as the red sandstones found in the Hoddam district, all of which are good building stones.

Coming back to the north of the Tay, the old red sandstone is found to overlie the country from Lochlomond along the face of the Grampians to Montrose, where stones for building purposes are to be found. The most important workings of this strata are those of the quarries which supply Dundee. Mylnefield Quarry may be noted for a stone not only durable, but capable of resisting an enormous pressure without fracture, so much so that in the erection of the Ballochmyle bridge, before referred to, that stone was carried across the country at great expense to form the ringhead of the centre arch, which has a span of 180 feet, and a height from the bed of the river to the keystone of the same dimensions. In mentioning this quarry, one is surprised that in restoring the Tay Bridge such stone as this is not used, instead of a combination of artificial material such as brick and iron. The crushing strength of this stone is given at 425 tons per square foot.

In speaking of Forfarshire, I cannot fail to notice the quarries which supply pavement, not only to this country but to all parts of the world; and as one of the industries of that county, and as showing the development of that trade, the Carmyllie Quarries, near Arbroath, fifty years ago, were worked by the aid of a single-power crane and a windmill for pumping the water from the bottom of the working, the few stones got in that way being carted a distance of about seven miles across the moors to Arbroath for shipment. About twenty-five years ago, in connexion with the late Earl of Dalhousie and a friend, I made a railway from the main line to the quarry, which has had the effect of developing the trade to such an extent that, instead of the windmill and the old crane, there are now ten planing-machines, besides stone-cutting machines, moulding-machines, &c., worked by seven steam-engines, showing the extensive use that is made of that stone not only for paving, but for steps, plats, &c. Specimens are now laid before you. The crushing strength is given at 500 tons per square foot. In speaking of the old red sandstone as useful for paving, the Caithness stone must not be overlooked, and for wear and tear it takes precedence of all others. As another branch of industry the development of this trade is quite as important as that of the Forfarshire stone before referred to. As an example of the value of this stone when subjected to continued wear and tear, the pavement in front of the New Club may be quoted, which was laid down forty-five years ago. Another example showing the same quality of durability, and also the size of stone that can be produced, is that in front of the Register Office, which was laid when the screen wall of that building was set back some thirty years since. The crushing test of this stone is given at 420 tons per square foot. In referring to sandstones, the length of this paper precludes me from giving in detail a description of the numerous quarries, and the immense quantities of good stone that lie along the eastern edge of the Moray Firth, of which Elgin Cathedral is a most notable specimen. Besides the care which the architect and builder should take to make themselves acquainted with the nature of the substance of which the stone they are to use is composed as to its durability, it is of importance, where great weight has to be carried, that its power of resistance to pressure should be known, as well as its tensile strength. The difficulty, however, is to ascertain from the compression of small cubes the relative strength of what the same material would be if enlarged in size. This was very forcibly brought under my notice by taking part with the late Mr. Buchanan, C.E., in testing stone and brick for the chimney of the Edinburgh Gas Company at the North Back of the Canongate, erected in 1845. These tests were made in the most careful way, by crushing cubes of 1-inch square of stone from the following quarries:—

RESULTS OF TESTS.

	Crushed at Tons per square foot.
Craigleith	315
Humbie	240
Hailes	225
Redhall	215
Binnie	182

A second test of Craigleith showed that, before being crushed to powder, it sustained a pressure of 440 tons per square foot. The appearance after fracture of the different cubes was that of a pyramid or wedge, and this led me to assert that if the cubes were enlarged a greater increase of strength would be gained; and, further, that if the pressure was vertical to the line of cleavage a greater resistance would be got, so that such a stone as Hailes, which is a laminated stone, would increase in strength, according to its surface, more in proportion than that of a liver-rock stone, such as Craigleith, Redhall, or the other stones that were tested. This led to discussion and further trial, the result being that, with a 4-in. cube from Hailes quarry, the resistance was equal to 567 tons per square foot. It may be worth while to give the results of the experiments we made in testing the brick. A great many different kinds of bricks of different composition were tried, the result being as follows:—

No.	Description of Specimen.	Dimensions. Length.	Breadth.	Thickness.	Weight.	Crushing Weight on each brick.	Crushing Weight per sq. foot.
		In.	In.	In.	Lb.	Tns.	Tns.
0	Common Fire Brick	9	4½	2½	7¼	89½	311
1	Extra size and quality from Mr. Livingston, Brick Work, Fireclay, and Ironstone	10	5	3	10¼	153	440
2	Do. do.	9½	4½	2½	9 5/16	140	445
3	Do. do.	9½	4½	2½	9 5/16	89½	285
4	General quality	9½	4½	2½	9	63½	204
5	Do. do.	9½	4½	2½	9	140	443
6	Same quality as specimens sent to Glasgow	9½	4½	2½	7 5/16	51	135
7	Common stock brick taken at random from a building	9½	4½	2½	8	51	150
8	Do. do.	9¼	4½	2½	8	25	73
9	Common general quality bedded with milled board	9½	4½	2½	9	51	153
10	Do. bedded with clay	9½	4½	2½	9	146	443
11	Do. do.	9½	4½	2½	9	153	469
12	Stone from Hailes Quarry	4	4	4	5 11/16	64	557

As to tensile strength, this is also important to the architect where corbelling, steps, plats, &c., have to be used, as well as in stones which have to be placed over voids, where both crushing and tensile strain are combined. The following were the results after careful and repeated experiments:—

	Breaking weight. Tons.
Craigleith stone	453
Hailes stone	336
Redhall stone	326
Humbie stone	283
Binnie stone	279

Although I did not test Arbroath and Caithness pavement, the following may be taken as safe:—

	Breaking weight. Tons.
Arbroath	507
Caithness	417

As to the resistance to pressure and tensile strain, the architect and builder should, after satisfying themselves as far as tests can, keep in view that the stability of the structure depends a great deal upon the proper constructive use of the material. Unless stones are fairly bedded there will be weakness and fracture, and unless the style of masonry adopted admits of every stone taking its equal share of the superincumbent weight put upon it there will be failure. This leads me to notice what I have observed with regret in the architect or engineer mixing the character of the masonry in such a way that one stone has more to bear than another. I have seen viaducts, for instance, built with rubble masonry of all sizes in the piers, while the corner-stones were made of increased dimensions, the result being that when the strain came, these corner-stones were fractured by the load pressing unequally upon them. But this leads me away from my text, so I hesitate to go further.

Another consideration for the architect is using stone which absorbs a great quantity of moisture. I have found, for instance, extensive buildings erected in a wet country with a stone which absorbed moisture to such an extent that the dampness which penetrated the walls not only rendered the house unequal in temperature, but led to the decay of the timber which passed into the walls; and caused what was called "dry rot," but what was really nothing else but wet rot, or timber taking consumption from lying in a damp bed. Vitruvius, the Roman architect, 2,000 years ago, says some very wise things both as to stone and timber. He recommends as to stone that it should be quarried in summer, and seasoned, by being allowed to lie two years before being used, so as to allow the natural sap to evaporate and test the stone as to its wasting; and for timber, he says, it should not be cut down in the spring, but in the autumn when nature is dormant. But this, again, I feel is leading away from my subject, so I come back to treat on Granite. Following up the northern district, I may take, first, what has been done by the well-known firm of Messrs. Macdonald, Field, & Co., from their extensive quarries all over Aberdeenshire. Fifty years ago the uses of this enduring material were confined chiefly to local purposes, although long before then a considerable export trade was done in street pavement, as well as more important works, such as lighthouses, docks (Portsmouth), bridges (Waterloo and London). The development of its various uses, both red and grey, was brought about principally by the energy and enterprise of this firm, while by the introduction of machinery that obdurate but enduring material can now be dressed with the greatest accuracy and finish at a cost greatly less than could be done when operated on by hand. Other gentlemen who have developed this trade were the late Mr. Gibb, and latterly and at present Mr. John Fyfe, whose quarries of Kemnay and Cove, near Aberdeen are the largest in the country for the production of stone used for curb and paving, as well as for the larger blocks required for such works as the Thames Embankment, part of which he supplied. There is so much to interest and instruct in a visit to the works of Messrs. Macdonald and the quarries of Mr. Fyffe that members of the Association could not spend a more useful holiday than in going to see the various applications of machinery in dressing and polishing such a stubborn stone, where columns and such like are turned with as much apparent ease as that of the wooden baluster of a staircase. Specimens of granites from the quarries of Messrs. Macdonald, Field, & Co.; Mr. Fyffe; and Messrs. Shearer, Field, & Co., are on the table, as well as a stone showing a very singular junction of colour, one half being of a beautiful red, the other grey; and this, I understand, divides the hill in a straight line from top to bottom. Returning to the south, I have to mention the extensive quarries and dressing machinery of Messrs. Shearer, Field, & Co., and Messrs. Newall & Co., at Dalbeattie. The Dalbeattie granite is obtained from deposits on both sides of the river Urr, near the town of Dalbeattie, in Kirkcudbrightshire. In colour it is a bright clear grey. It is a hard, close-grained granite. The close aggregation of its different minerals is a very important feature in it, and makes it well adapted for engineering and building purposes. It is also very suitable for ornamental purposes, as it is uniform in the grain, takes a fine polish, and is agreeable in colour. This granite was brought to the front for engineering and paving purposes about twenty years ago, by Mr. Hugh Shearer, of Great George-street, Westminster. He had the first contract for the supply of the granite for the Thames Embankment at Westminster, and got it approved and introduced into that great national work. Since then he and his firm have steadily and energetically used it in many other important works, such as docks, bridges, fortifications, lighthouses, and fronts of buildings. The same granite crosses the country very much in the route of the Portpatrick Railway, and was used for the principal viaducts on that line on to Creetown, where at Kirkmabreck extensive quarries were opened by the Liverpool Dock Trust, who not only built their dock walls with it, but the dock offices and sheds. It is worth noticing that the engineer who first opened up these quarries adopted a style of building by using the blocks at random, of all shapes and sizes, the same as was done by the Roman masons, and which, apparently, has the same endurance as to structural stability.

I come now to speak of the value of this material with regard to its strength. While tests have been made to ascertain its resistance to pressure, too much dependence must not be placed on results given in text-books. Granite, like other material of which I have had experience, has a cleavage the same as sandstones have, although this is not the popular opinion, and would be condemned by the orthodox geologist, as it touches on the theory as

asserted of granite being an igneous and not an aqueous rock. I mention this not for the purpose of geological dispute, but to reiterate what I have before asserted as to sandstone, viz., that to use granite so as to get the greatest resistance to pressure, the stone should be used so that the force should be at right angles to the cleavage or bedway of the materials. That brings me to this, that granite, like sandstone, laid upon its natural bed, will increase in strength in the ratio of its superfice. However, I repeat as to crushing that if granite is fairly bedded on an equal and resisting foundation no load can in ordinary circumstances crush it. It may be safe enough in dealing with granite, to take from 684 to 848 tons per square foot as a fair test of its strength. The remarks I have made as to granite apply also to other rocks such as trap, graywacke, and mica-schist rocks, which are to be found in districts where sandstone may be too expensive to get. The method of using these for building is admirably shown in Hawick, Galashiels, and places where such stone is readily found. If properly treated, nothing can be more enduring or more suitable for harmonising with the landscape of the district in which it may be placed. A popular fallacy is that these rocks draw damp. This is not the case; they condense the atmosphere in the same way glass does, and if this is provided for in the building, there is not the slightest danger of any water penetrating the walls. In acknowledging the honour you have conferred upon me in asking me to bring this paper before you, I feel that the short time I have had for preparation has not allowed me to give the subject the justice it deserves, neither would one lecture be sufficient to exhaust it. I feel very much in the position of a hewer, who has merely roughed the stone, and who has not had time to continue the operations necessary to give that finish to the surface which might develop beauties and results that could never be seen in the rough. The selection for use of a material such as building stone goes much further than ordinary observation. Enduring structures speak not only of the habits of the people, but of the civilisation they have attained. The enduring Pyramids of Egypt, the ancient buildings of Greece and Rome, the Temples of Cambodia (which country has no history except in the elaborate limestone buildings which remain), show that the profession of an architect has to do with what every nation should prize, that is, that to all time their architecture should faithfully represent, as far as it can, the people with whom it originated.

The lecture was illustrated by specimens of the various stones referred to.

At the close, Mr. Lorimer proposed, and Mr. Whitelaw seconded, a vote of thanks, which was heartily accorded.

THE CHISWICK SCHOOL OF ART.

This institution, situated on the Bedford Park Estate, Turnham-green, has been opened for work some six or seven weeks, and bids fair to be successful, for already it has 140 students on its roll-book. The building has been erected from the designs and under the superintendence of the honorary secretary of the school, Mr. Maurice B. Adams, architect, who has aimed at giving it a distinctive character while making it to harmonise with the peculiarities of its surroundings. Only a portion of the building is yet erected, larger studios than those now in use, and other additions, being intended in the rear when the wants of the school call for increased accommodation. The apartments now in use appear to be well adapted to their purpose, and are suitably furnished and provided with all necessary appliances. The furniture throughout the building, including the revolving model-throne, was made by Messrs. Robertson & Sons, of Alnwick. Special attention has been paid to the gasfittings, which are adapted to the use of the different classes, and provided with reflectors and ventilating exhausts, executed by Mr. Elsley, of Great Portland-street. The details of colour internally, and of all necessary apparatus for school work, have been arranged by the directors of the school (Mr. E. S. Burchett, of the South Kensington schools; and Mr. F. Hamilton Jackson, formerly of the Slade School). The building was on Saturday evening last the scene of a "house-warming," in the shape of a *conversazione*.

Mr. A. J. B. Beresford-Hope, M.P., in taking the chair at a meeting held later in the evening, said he was glad of that opportunity of making himself personally acquainted with one more of the noble network of institutions which had spread and were spreading a knowledge and love of art in this country. Planted as it was in Bedford Park, in a very city of art, and being almost a part of that great and important experiment of making a London dwelling graceful, picturesque, and lovable, as well as inhabitable, the Chiswick School of Art started under very exceptional advantages, and was likely to take a foremost place amongst its brethren. Students at schools of art might be divided into two or three classes. First, there were those who went there for technical instruction to help them on in the path of life which they had chosen to follow, and who exemplified the noble quality of self-help. Secondly, there were those who went for elegant drawing lessons: of that class he would say nothing at all. There was a third class, to whom he should proceed to address himself, viz, those who, whether they had taken up the study of art as a profession in the highest sense of the word, or whether they had taken up as a pastime, also in the highest sense of the word, meant to pursue their studies thoroughly, and to derive the utmost advantage they could from the instruction which they would receive. To this class of students he wished to point out that education in art was education in a great deal more than the mere mechanical facility of transferring to paper or putty the forms which the students saw before them. The drawing or model produced by the student had its value, but that was as nothing compared with the value to the student of the exercise of his mental and moral faculties which the production of the drawing or model necessitated. Such exercises would bring home to the mind of the pupil as nothing else could do that great divine law of proportion, which governed all things, and was at the bottom of all things, moral, metaphysical, and natural. Was not the virtuous man the man who had all his qualities in due proportion,—the wise man, he who had his reasoning powers in due proportion,—the wit, he who had a knowledge of grave and gay in due proportion,—the poet, he who had a knowledge of things seen and things unseen in due proportion? One of the greatest surgeons of the day, who began life as an artist, and who was still one of our best water-colour artists, had stated that he conceived he had gained great benefit in his professional education and work from his art-training, which had taught him sharpness of eye and neatness of hand. There was no royal road to art, and the students of schools of art should not rest content when they had acquired a slipshod, scratchy method of sketching, which, whatever drawing-room popularity it might bring them, would never bring them fame as artists. Perfection in art could never be reached without assiduous study, constant thought, and continual striving after improvement. The cleverest sketches were those which contained the fewest lines, and which depended on the outline for effect instead of on a mass of stippled work, but the artists who made those clever outline-sketches had only attained their skill gradually and by dint of hard study, dispensing bit by bit with stippled surfaces. Although it was not likely that any student in that school would ever become a Turner, a Teniers, or a Raffaelle, that was no reason why every student should not do his or her very best to excel. He exhorted them to set-to with a hearty spirit of goodwill, good temper, and good-humoured through dogged determination to succeed in the race.

Mr. T. Armstrong, Director of the Art Department at South Kensington, said he had been much gratified by what he had seen on the Bedford Park estate, and especially by the cheerful and well-appointed School of Art in which they were assembled. As he had had but a short experience of seven weeks only in his official capacity, it would be presumptuous on his part were he to attempt to enter at length into the subject of the best mode of carrying on the work of the numerous schools of art which were governed from South Kensington. There were colleagues and coadjutors of his at South Kensington who were more competent for that task. He entertained the greatest respect for the methods of teaching pursued by his predecessor and his staff, whose methods would be continued substantially unchanged, although there would be further developments as requirements called for them. He wished very much to stimulate the study of modelling from the figure, and should like to see life classes formed in every country town. It was his own feeling that painting from still-life had been a little overdone. He would not propose to discountenance it altogether, but a little less of it would suffice. He believed he had the authority of his political chiefs, Earl Spencer and Mr. Mundella, for saying that the tendency of art education at South Kensington under the Department would be towards fostering the arts of design in connexion with industry. That, in his opinion, was the *raison d'être* of the Department and of the schools in connexion with it. Art education, provided at great cost to the State, should not aim at producing a race of painters of pictures. He hoped and believed that in connexion with the schools of art, the technical schools, of which so much had been heard lately, would have increased influence for good on the industries of this country. That the art schools under the care of the Department had done much for the industries of the country was testified by foreign nations, particularly France and Germany, who were imitating us in our methods of art education, and were sending over distinguished men to examine into our system and report upon its results, with which they expressed themselves to be very agreeably astonished. He trusted that the advice which Mr. Beresford-Hope had given to the students would be taken to heart by them. The people who resided on the Bedford Park estate owed great thanks to Mr. Carr. He was the Moses who had brought them out of the Egypt of darkness and filth which lay to the eastward. Bedford Park, with its picturesque houses, its pleasant club, its school of art, and its æsthetic public-house where unadulterated spirits were sold, was, he thought, a very desirable place to live in, and he wished all happiness and prosperity to its colonists.

Mr. George Augustus Sala moved a vote of thanks to Mr. Beresford-Hope for the address which he had given, and urged the students of the Chiswick School of Art to be earnest in the pursuit of their studies. He observed that the success which schools of art had met with awakened in his mind sad reflections, and he advised those who welcomed their success to read the autobiography and letters of Haydon, who strove for many years to establish schools of design in this country, and almost wore out the stairs of Downing-street by his vain footsteps after Ministers. He was laughed at for his pains, and treated with indifference and contempt. The great Duke of Wellington, in a curt note to him, told him that there was no chance of Parliament devoting a halfpenny of the public money for such a purpose. But everybody knew what had been the result of the establishment of art-schools in this country, the success of our system having been so great that even France, the mother of European arts, herself came to learn of our work. Mr. Sala concluded by humorously referring to the days, forty years ago, when he was a pupil at a Pestalozzian school at Bolton House, Turnham-green. Among other accomplishments which he learned there was that of being able to design a sort of ornamental pediment containing a figure of Minerva rewarding the young gentlemen of Bolton House for diligence in their studies by presenting them with cornucopias, pairs of compasses, beehives, &c. The work was executed in plaster by an Italian gentleman in Leather-lane, and duly affixed to the front of the house, where it remained for many years; but, alas! it and the house had, within the last few years, totally disappeared.

THE EDUCATION OF SURVEYORS.

In the course of the opening address at the Surveyors' Institution, on the 14th inst., made by the President, as mentioned in our last, Mr. Edward Ryde said:—The scheme of technical education is believed to have been of very material assistance to us in obtaining our charter. I have always been an ardent advocate for the extension of education; but I am bound to say that I approached the consideration of the question as applied to the admission of members of this Institution with much caution and reflection. That I did so is the more satisfactory to me now that I have formed a mature judgment that the course which the Council finally adopted, and which they have now to carry out under the charter, will be conducive of much good to the profession. The subject of education generally is a very extensive one: its con-

sideration and development have become very popular and almost universal, and no profession can safely refuse to give it attention.

As showing to some extent the direction in which general opinion is running in connexion with this subject, I may mention that the International Committee of the Surveyors of Europe, sitting as a Congress in Paris, in 1879, discussed, among other questions, the desirability of requesting the respective Governments of the several countries represented at that Congress to institute by compulsory enactment that every surveyor should take out a diploma, after the manner of the surgeons and apothecaries of England, previously to being permitted to practise. But the English deputation to this Congress was of opinion that its own Legislature would not be likely to interfere in favour of a profession, at the instance of such profession, without some special demand on the part of the public. They further urged that after all, too much importance must not be attached to the possession of such a diploma, inasmuch as the real qualifications of a surveyor could only be acquired after years of experience, coupled with integrity, perseverance, and intelligence. Hence it constantly happened that surveyors of large experience were taken from one part of England to another on account of the special qualifications which they possess,—a distinction which the possession of a diploma acquired in early life could not command. In no professions in England, except those of Law and Medicine, was any compulsory examination required, except as before mentioned. This was to be accounted for or explained in the case of Medicine by the fact that the consequences of incompetency might involve questions of life and death; and the same might be said with respect to the legal profession in connexion with criminal law. It would also be observed that the same rule applied in the cases already referred to of surveyors appointed under the London Building Act, where infringements of the law relating to the construction of buildings might lead to fatal consequences. In the case of other professions, incompetency generally merely resulted in pecuniary loss, which, it was assumed, might have been guarded against by a careful selection. But the English deputation was, nevertheless, prepared to vote in favour of a diploma, which they could understand was probably more needed in France than in England, owing to the compulsory subdivision of property at the death of the owner, and the consequent necessity for a numerous class of surveyors of ascertained skill whose services should be within reach of everybody.

I cannot do better than refer to the very excellent speech made by our much-respected first Associate of Council, Mr. J. H. Lloyd, at the first meeting of the Institution of Surveyors, which speech will be found reported in vol. i. of our Transactions, at p. 14. I cannot describe to you the advantages of our Institution in words so happily put together as those which were then used by Mr. Lloyd, and all I can say is that any member of the Institution who has not read that speech would, I think, find pleasure in doing so. Taking that speech as my model, and pointing to the charter which we have obtained as the result of the labours of the Institution down to the present time, I think I may fairly assume that the effect of the charter has been to transform our Institution from a private society into a public body, having a fixed and well-settled constitution, with by-laws which cannot be altered without the previous approval of the Privy Council.

Although it is not made compulsory for a period defined in the charter for a surveyor to pass an examination prior to his election as a Professional Associate, it is open to the Council to frame rules so as to enable him to submit himself for examination at once, and in the same way the admission of Fellows may be facilitated. It is satisfactory to find that a considerable number of young men are availing themselves of the educational clauses of the charter. Many have already joined the student class, and many others are preparing to do so. They see the advantages which a certificate so obtained will give them over others who do not possess it, and the use which it will be to them in establishing themselves in life, whether they look to get appointments or clerkships in the offices of others, or start in practice on their own account. To employers, moreover, the advantage of the certificate will be most useful as a distinguishing mark between those who have been brought up to the profession and those who have not.

If I am asked what I consider to be the best course of education for a surveyor, I may reply that I consider any of the subjects which are contained in the educational course of the Institution desirable; but it is impossible for any one man to qualify himself for practice in every branch of the profession. A surveyor and land agent should have a thoroughly practical knowledge of agriculture, including a knowledge of agricultural chemistry and geology; he should also make himself a good accountant and bookkeeper. He should possess a knowledge of measuring land and making maps, a knowledge of timber and the art of measuring it, and, above all things, he should acquire, in as practicable a manner as possible, a knowledge of the best systems of managing estates.

The recent depression in agriculture, and the troubles which have befallen the landed interest generally in recent times, have rendered this last qualification more important than ever. However much the practice of agriculture may have been retarded, recent difficulties have shown more than ever the necessity for the services of skilled land-agents. It has been very much the custom during the last quarter of a century to assume that estates can be managed by gentlemen who have not had suitable previous training. It seems to me that that state of things must now be brought to an end. A land-agent responsible for the management of a large property must be able to determine by his own experience the exact amount of rent which a farmer can afford to pay under every circumstance which can arise. Moreover, the complaints of a tenant must, on the one hand, have proper attention, and, where necessary, must be met by relief or remedial measures; on the other hand, if every complaint of a tenant is to result in a reduction of rent, or some other advantage to the tenant, and disadvantage to the landlord, it will soon be found that there will be universal complaints, and that the landlord's interests will suffer. Again, an agent must be able to discriminate between a beneficial expenditure of capital and one which is not beneficial. On some estates it may be very advantageous to expend large sums of money in rebuilding farm buildings: on others it may be a great waste of money; as, for example, in the case of land near London or any other great centre of population, which, after a few years from the present time, will become building land.

If a surveyor has intended to devote himself more particularly to the business of a building-surveyor, or, in provincial towns, to that of an architect and surveyor, he will, of course, turn his attention more particularly to the valuation of buildings and building lands in town than to agriculture and the management of country estates. Some knowledge of architecture, however, will be useful to a surveyor in any branch of practice; but I am now assuming that my address is made to surveyors, and that architects, strictly speaking, are without the limits of our Institution.

LIVERPOOL ARCHITECTURAL SOCIETY.

The second ordinary meeting of this Society was held at the Royal Institution, Colquitt-street, on the evening of the 16th inst., the president, Mr. Charles Aldridge, F.R.I.B.A., occupying the chair.

The prizes for drawings submitted at the various meetings of the Class of Construction and Design during the last session were awarded to the successful students: the first to George Hornblower, and the second prize to Richard Holt.

The paper for the evening, entitled "Recent Notes from the Continent in Pen and Pencil," was then read by the author, Sir James A. Picton, J.P., F.S.A., and was illustrated by numerous sketches of features of interest at the various places visited by him.

A discussion followed, in which the president and Messrs. Joseph Boult, G. H. Moreton, and H. B. Bare took part, and the meeting terminated with the usual vote of thanks to the author of the paper.

The Electric Light adopted for Hove. The Town Commissioners of Hove, adjoining Brighton, have, it is stated, decided to illumine by electric light, with as little delay as possible, the whole of the town, at an estimated cost of 2,000*l.* per annum. The system agreed upon is the Brush system. The present cost per year for the gas is about 1,900*l.*

ARCHITECTURE AND ARCHITECTS IN LEEDS.

The inaugural address to the Leeds Architectural Society was delivered on the 10th inst. by the President, Mr. J. B. Fraser, F.R.I.B.A. In the course of it the President said:—I should like to occupy your time for a very few minutes in calling attention to some of the more prominent of the new buildings in our immediate neighbourhood, or at least to such of them as have come under my observation; and, first of all, as being of perhaps the greatest public interest, let us glance at the School Board and Municipal Offices in Calverley-street. The School Board Offices are, as you know, complete and occupied, and the block containing the Municipal Offices, &c., is sufficiently far advanced to enable us to form some idea of its ultimate appearance, although until complete it will be unfair to pronounce any definite opinion. I think all will admit that Mr. Corson tackled with his usual ability a very difficult problem when he designed a block of public offices under the very shadow of one of the architectural gems of the country, our noble Town-hall, and where the breaking up for the different floors and rooms necessitated a treatment on such a totally different scale; he was, also, still further handicapped by having to divide his building (which was originally designed as one block) into two distinct structures. Whether he has overcome the difficulties presented with entire success will, of course, be a matter of opinion, but every one will acknowledge the great skill and care exercised in planning and working out the different details. The treatment of the arched ceiling in the public reading-room is novel and worthy of attention as an attempt to utilise the materials of fireproof construction in decoration. I anticipate that the arrangement of parti-coloured blocks in the soffits of the arches may give rise to some criticism. I would particularly draw your attention to the free use of terra cotta as a means of internal decoration, and the admirable manner in which it has been introduced into these buildings. The Athenæum buildings by Mr. Bakewell claim our attention as being a very bold and successful design, but I must take some exception to the weak effect produced by the exceedingly flat pointed arches and small piers between the shops of the ground-floor. The shop-keeper crase for plate-glass, which Mr. Corson alluded to in his address, is here especially noticeable. The large warehouse in Park-square, designed by Mr. Ambler for Messrs. Arthur & Co., has a striking principal front, as regards the combination of cutting or rubber bricks and dull red stone, and the treatment throughout is novel and bright. The carving, especially over the central entrance, is excellent, and there is a good sample of wrought-iron work in the area panels. Old-fashioned, sleepy-looking Park-square will soon be losing its time-honoured characteristics, and already presents in vivid contrast the quiet style of the first quarter of the century and the eclectic ideas of its last quarter. The block of shops at the corner of Somers-street and Park-lane, by Messrs. Smith & Tweedale, appears to me to be a very satisfactory example of street architecture, although with no features calling for special comment. By the same architects a good example of the treatment of brickwork may be seen in the Cap and Clothing Factory of Messrs. Brook & Co., in Grace-street. The additions to the Oriental Baths, Cookridge-street, will attract considerable attention, both on account of the public interest attaching to the building, and architecturally because of the attempt to transform into a nondescript modern Gothic front the well-designed Saracenic elevation of Mr. Brodrick; the result, as far as we can judge at present, can scarcely be considered a gain from an art point of view, and the change from the old familiar dome to the turret over the central block is, I think, by no means an improvement, and it is to be regretted that the architect was not allowed to design an entirely new front. Messrs. Adams & Kelly are to be congratulated on their exceptionally successful treatment in raising and enlarging St. Ann's Roman Catholic Schools. The building, though unimportant, is neat and pleasing, and the additional story has much improved it. Mr. W. Turton's new stables, off North-street, are valuable, as being the outcome of long practical experience in the ownership and care of horses. There is nothing specially novel in the plan: the stables are lofty and wide, and show clearly

that even in the midst of a crowded town it is not judged desirable to risk the horses' health by overcrowding. Glazed bricks are, of course, extensively used, and vitrified bricks for pavement. A bath for the horses, sunk down in one corner of the stable-yard, is worth making a note of. One cannot help being somewhat disappointed at the introduction of an old-fashioned stucco front into our principal business thoroughfare, and therefore I cannot think the Imperial Hotel altogether satisfactory as far as its external appearance is concerned; internally, I believe, the building is a success. While speaking of stucco it may be interesting to observe that some of our London brethren are commencing to use cement concrete cast in blocks, moulded and coloured to their designs, for external dressings, and also for internal features. This is quite a new departure, and the experiment will no doubt be watched with interest. Where stone is exceptionally costly, terra-cotta uncertain in the burning and twisting, and bricks hard and unsuitable for elaborate treatment, the use of concrete blocks in string-courses, cornices, and other features, would certainly appear to be of value to the architect, who is expected to produce effective and sound work with inexpensive materials. The shops by Mr. Bakewell, on the north side of the new approach to the joint station, while giving evidence of careful thought in design, and in the matter of safe and economical construction, are, I venture to think, of too plain a character for so important a situation, and it is open to question whether such extreme plainness is not a mistake from a financial as well as an artistic point of view, as there can be no doubt our shopkeepers are year by year adopting, and finding the advantage of well-designed and attractive-looking places of business. Glancing in passing at the Covered Market, I think we may compliment the Corporation on having gained an increase of rent-producing space by the addition of a gallery over the outside ground-floor shops. I think this addition somewhat of an improvement. I cannot but regret the waste of public money expended in the building of the market in Vicar's Croft, and am sorry to notice that the streets are not covered so as to protect the public from the weather. The Borough Coffee-house, by Mr. T. W. Baxandall, is a good, honest, substantial-looking building, and well suited to its purpose, and must certainly take rank amongst our street improvements. The Model Lodging-house, in Harpur-street, by Mr. D. Dodgson, is well planned, and it is interesting as a sign of the constantly-increasing demand for better provision for the bodily comfort and for the improvement of the mental and moral status of the poorer classes. The People's *Café*, just over Leeds Bridge, is another example of modern social requirements, and is a noteworthy and handsome addition to our public buildings, and very creditable to the architects, Messrs. Adams & Kelly. The addition to the *Leeds Express* Office is an example of the unsatisfactory effect of engrafting on a well-balanced and carefully-designed building, a wing by another hand, and in a totally different style. The Police Station at Crown Point-street, Hunslet, though unimportant as to size, deserves a passing note, as being one of the latest Corporation works, and as showing that ability and artistic taste can be occasionally found amongst our corporate officials. I must call in question the good taste of the extremely disproportionate coat of arms over the entrance. I suppose we ought and do feel proud of our ancient belongings; but in a building so practically associated with the failings and shortcomings of our frailer citizens, it might be more respectful to the shield of our forefathers to keep it in the background. Mr. Alf Cooke's new printing-works, Hunslet-road, by Mr. Ambler, are well arranged and amply lighted, and are, taken as a whole, an encouraging and satisfactory feature of architectural progress, and I would specially draw your attention to the use of terra-cotta for the external ornamentation, as being a pleasing example of the adaptation of this material. It has hitherto been too much the custom of our manufacturers and employers of labour generally to relegate the planning and erection of the workshops necessary for their business to a respectable and trustworthy builder, thereby saving considerably, as they imagine, in the matter of the architect's commission, &c. These hard-headed, money-making, and money-saving people are now apparently finding out that the long worked-for experience of the architect is worth paying for, from a purely economical point of view; but if a slight additional expenditure beyond that of the requirements of the bare walls and square-hole order of architecture is required, the ultimate result in the cheerfulness of his place of business, the better health of his *employés*, and the improved appearance of his native or adopted town must more than repay an ordinary thoughtful and liberal-minded man. It may, perhaps, not be out of place here to offer a word of congratulation to, and a hope for the further success of, Mr. Cooke, in his efforts to improve the class of work which he has taken up with such vigour, and which may be designated in general terms as art for the million. Messrs. Kitson's block of new offices, by Mr. Chorley, presents a business like and appropriate elevation, the most interesting feature being the carved brickwork, which has been freely used, and, I think, with very considerable success. We must regret the necessity of further additions to Holbeck Workhouse, especially as the expenditure touches all of us so nearly in one of the tenderest spots,—our pockets; but as the work has to be done, it could scarcely fall into better hands than Mr. Hill's, who is carrying it out. The buildings erected by the Leeds School Board at Headingley and Kirkstall, many of you will have observed, are being built externally entirely of stone. I do not, for my own part, think the change, from the admirable groups of brick and stone buildings designed by Messrs. Adams & Kelly, by any means an improvement. It is scarcely necessary to say that, as far as they go, the new schools, though very plain, are designed in good taste. In addition to the foregoing new schools, the Board have also carried out additional alterations to the Ellerby-lane, Jack-lane, Bewerley-street, and Stanningley Schools. The new work has been designed to harmonise with the existing buildings. I have been specially pleased with the satisfactory appearance of two pairs of semi-detached villas at Far Headingley, designed by Messrs. Smith & Tweedale. The colour of the brickwork is very rich, and the absence of any glaring contrasts in the way of white dressings enhances the thoroughly warm, home-like, and comfortable effect. The residence at Headingley, off Shaw-lane, by Mr. Hill, designed in the Domestic Gothic style, is a most successful effort, and shows how this class of work can be adopted for modern houses. The Wesleyan Methodist Chapel at Meanwood, also by Mr. Hill, is a simple picturesque example of Ecclesiastical Gothic architecture. An admirable specimen of Free Classic design in brickwork, and one in every way worthy of attention as showing what can be done by the aid of good cutting bricks, is exhibited in the Baptist School in Meanwood-road, designed by Messrs. Smith & Tweedale. The details are carefully wrought out, and all seems suited to the material used. The carving is, I think, if anything, too much undercut and of too florid a character, otherwise this little building is quite a success. The new laboratory at the Leeds Grammar School, designed by Mr. Chorley, in strict harmony with the previously existing building, has been carried out in a very complete and efficient manner.

DISTRICT SURVEYORS AND THEIR DUTIES.

At the meeting of the Metropolitan Board of Works on the 18th inst., reference was made to a point of considerable importance connected with the duties of District Surveyors.

The Building Act Committee reported that they had considered the letter from the Vestry of Paddington, relative to the District Surveyor's professional connexion with certain buildings in course of erection at the rear of Nos. 397 and 399, Edgware-road. "The Vestry recently called the attention of the Board to these premises, stating that they abutted upon a roadway 25 ft. wide which had not been approved by the Board. As the entrance to this approach was enclosed, the Board requested the District Surveyor to inform them of any alteration which might enable them to take action in the matter. The Vestry now state that they have been informed that the services of the District Surveyor have been retained by the freeholder of the estate and the builder of the premises. The Vestry also express an opinion that if the works had been superintended by an independent surveyor, the existing difficulties might have been obviated. Mr. H. Gundry, the District Surveyor, has attended your committee, and stated that he was professionally engaged by the leaseholder of No. 399, and gave notice thereof to the Board, who appointed another district surveyor. Mr. Gundry admits that he was employed by the freeholder of the estate to let the property, and that no surveyor was appointed to supervise the works at No. 397. By thus acting for the freeholder, it appears to your committee that the District Surveyor also became virtually responsible for the works at No. 397, in respect of which no notice was given to the Board. Your committee are of opinion that, although the District Surveyor may not thereby have infringed the letter of the 37th section of the Building Act, such a practice is highly objectionable, and they recommend that they be authorised to further consider the case in connexion with the proposed amendment of the Building Act; and that the Vestry of Paddington and the District Surveyor be informed accordingly."

On the motion of Mr. J. E. Saunders, who, as chairman of the Committee, brought up the report, the recommendations were adopted.

ARCHITECTURAL ASSOCIATION.

The first ordinary general meeting of this Association for the session 1881-82 was held on Friday, the 11th inst., Mr. Aston Webb, president, in the chair. Sixty-two gentlemen were nominated members.*

The report and balance-sheet for the past year, together with the reports of the various classes, were, on the motion of Mr. Thomas Blashill (who congratulated the Association on the great increase in the number of its members and in the increased usefulness of its work), unanimously adopted.

The annual report reviews the work of the past session, and contains the following passages as to the work of the future:—

"Admission to the Associateship of the Royal Institute being now attainable only by passing an examination, the committee have thought it desirable to vary somewhat the arrangements of the classes, with a view to making them specially useful to members preparing for that examination. The meetings of the classes generally have been rearranged, an entirely new class for the study of Professional Practice has been started, and courses of lectures, dealing especially with Design and Construction, and connected with the classes, have been arranged to be given by Messrs. E. J. Tarver and T. Blashill, which the committee believe will be of considerable advantage to the members generally, as well as to those about to present themselves for examination.

The thanks of the Association are due to the delegates, Messrs. J. D. Mathews and H. L. Florence, for their services in representing the Association on the committee appointed to prepare the scheme for the above examination."

The balance-sheet showed the total income of the year to be 665*l.*, including 416*l.*, received on account of members' subscriptions, and 62*l.* for entrance-fees. The total expenditure was 552*l.*, a balance of 112*l.* remaining in the treasurer's hands.

The reports of the classes detail a great amount of good work done.

The President said a letter had been received from the Chairman of the Working Men's Club and Institute Union asking the members of the Association who might have works in progress to conduct parties of workmen over the buildings on Saturday afternoons. The President commended the matter to the attention of the members, as he was convinced that it was a good thing to bring architects and workmen together.

The President then delivered his inaugural address, portions of which were given in our last (p. 627, *ante*).

In the discussion which followed,

Mr. J. Douglass Mathews, after congratulating the President upon occupying the chair of the Association, expressed his conviction that the present was a very important era in the history of the Association. Probably one of the most important subjects touched upon in the President's address was that of Mr. Street's suggestion for the fusion in some way of the Institute and the Association. It was not very surprising, perhaps, considering the great success of the Association, that such a suggestion should be made, but he (Mr. Mathews) sincerely hoped and trusted that the Association would never for one moment entertain any question of fusion with the Institute. The question had been mooted before, and the offers made had been firmly refused, as he hoped such offers always would be. Although, if such fusion took

* The number of members whose names are given in the "Brown Book" for the present session is 853, of whom 691 are resident in London.

place, the members of the Association, might be left pretty much to govern themselves, they would feel that they had not that perfect freedom which was so essential to enable them to pursue their work. Although he thought they would all be opposed to such fusion, they had no differences with the Institute in any shape or way. Each body had its own work. The Association had shown that it had every desire to help the Institute, and the statistics which had been quoted by the President showed that there was no animosity between the two bodies. For the last few years he had had an opportunity of knowing pretty well the working of both societies, and he knew that one society could and did help the other constantly. The Institute had no need to be afraid of the Association; it need not think that, because the Association had increased, its own members would not increase. It was found in practice that the greater part of the members of the Association who followed the profession in earnest looked forward to the Institute as a kind of goal, and it was gratifyng to know that the members of the Association who joined the Institute did not forget the Association. The Association should be, and indeed was, a kind of nursery or feeder to supply the Institute. The Association had shown itself to be in earnest in helping the Institute, by taking up the examination scheme most thoroughly, with the view of making it a success, and he did not hesitate to say that it would be a success. He begged to move a vote of thanks to the President for his able address.

Mr. Blashill said the advice which the President had given as to a curriculum of study for young architects was most useful, and he hoped it would lead to something being done in the matter. With regard to the proposed fusion of the Association with the Institute, having very thoroughly considered the matter, he, like Mr. Mathews, should regret most sincerely if anything of the kind took place, although at the same time he claimed to be thoroughly loyal to the Institute. With all that had been said by Mr. Mathews on the subject he fully agreed. He ventured to say that the more the gentlemen who thought that good would arise from the proposed fusion made themselves acquainted with the actual position and method of working pursued by the Association, the more fully would they see the futility of their proposals. Of course it was a very plausible idea: everybody liked union, but in reality there was no disunion, and there never had been any discord between the Institute and the Association,—at least, not during the last twenty-one years. The work done by the Association during the last one-and-twenty years fully justified its determination to continue in its own course. The proposal for fusion was full of objection. The new examination scheme, he was convinced, was going to succeed, and its success would be largely due to the support which was given to the Institute by the Association.

Mr. E. C. Lee expressed the pleasure with which he had listened to the President's advice to young men entering the profession, and urged upon all such the desirability of drawing up and adhering to some systematic line of work and study.

Mr. Lacy W. Ridge said, with regard to the suggestion thrown out by the President of the Institute the other evening, he hoped the Association would retain its soul in perfect confidence. It was an amiable idea, likely to occur to a gentleman who, from the dignity of the chair upstairs, surveyed the whole of the profession for the first time. That suggestion would never come out of the room wherein it was started. The feeling of the Institute itself,—he might even say the feeling of the Council of the Institute,—would be strongly opposed even to the making of an offer for fusion with the Association, and therefore the members of the Association might dismiss the matter from their thoughts. The feeling of the Institute as a body, and especially of the members who were also members of the Association, was unanimous in saying that union with the Architectural Association was not to be thought of for one moment. It was not only true that the Association was a feeder to the Institute in the way of supplying it with members, but that it had done in the past and would do in the future a great deal in sending into its ranks architects who were thoroughly trained.

Mr. Gotch said that with regard to the question of curriculum, a great evil of the present system of architectural education was that so much of it was optional.

Mr. Stannus observed that he thought Mr. Street's suggestion had been scarcely understood by the gentlemen who had spoken. He hardly thought it should be characterised merely as an amiable suggestion, for Mr. Street had had a wide and clear outlook on architectural matters for many years past, and although he had only just taken the chair of the Institute, he was quite capable of offering a mature opinion on the subject. He thought that Mr. Street's idea was not so much that there should be an actual fusion of the two societies, as that they might combine with the Institute and other architectural societies for certain purposes, and send delegates to sit at the council-table for the consideration of specific matters.

Mr. Vacher suggested that it would be well to appoint a committee to draw up something like a complete curriculum, and also to frame, with the assistance of the honorary solicitor, a more perfect and satisfactory form of agreement than those at present in use in connexion with the "articling" of pupils.

Mr. S. Flint Clarkson said that the proposed scheme of fusion was so thoroughly considered and so unmistakably decided a few years ago, that nothing would be gained by the reconsideration of the subject at the present time, except that the undesirability of fusion would be demonstrated more clearly than ever.

The President having acknowledged the vote of thanks, the meeting terminated.

THE LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.

THE first meeting of this society for the present winter was held on Monday, the 14th inst., at No. 4, St. Martin's-place, Trafalgar-square.

Mr. Alfred White, F.S.A., presided, and gave a brief review of the work of the past session, in the course of which he incidentally referred to the discoveries made during the works now in progress at Leadenhall Market. He had no doubt that much remained to be discovered on the same site, and as the excavations were now reaching the Roman level, he trusted that Mr. Price, who was watching over the work, would soon have some additional important and interesting discoveries to report. It was very satisfactory to know that Mr. Price and a few other gentlemen had free access to the excavations just now taken in hand for the completion of the "Inner Circle Railway," which would traverse an extremely interesting part of Roman London. During the summer a number of members of the Society paid a visit to the excavations which had revealed the Roman villa at Brading, which, though far from Middlesex, possessed much interest for the members, owing to the presence of Roman remains in London. The excavations at Brading were under the direction of Mr. J. E. Price and Mr. Hilton Price, both of them members of the Society. The villa had attracted so much interest that as much as 60*l.* per week was received in shillings during the summer for admittance to see the remains. In that way he hoped that the public would contribute a considerable sum of money towards the expense of the excavations and the cost of roofing over and otherwise preserving the remains which were discovered. Theirs was not the only society which had taken an interest in these discoveries. The Society of Antiquaries had contributed funds towards carrying on the excavations, and another society, the Royal Institute of British Architects, had not only contributed money, but had printed in their "Transactions" a very valuable paper, illustrated with coloured representations of some of the pavements, while others were given in outline. The paper was one well worthy of the attention of archæologists, and everybody who subscribed 2*l.* 2*s.* to the excavation fund would be entitled to a copy of it, including the illustrations mentioned. Alluding to the losses of the year, Mr. White referred to the deaths of Dean Stanley, Lord Hatherley, and Mr. George Russell French, all of them members of the Society.

Mr. Edwin Nash, F.R.I.B.A., then read a brief paper entitled "Archæological Notes on Middlesex." At the outset he spoke of the confusion often caused in archæological discussions by people who used the words "antique" and "ancient" as convertible terms. The word "antique," as he understood it, was a special term significant of the art of Greece and Rome. The "Apollo Belvedere" and the Parthenon and its sculptures were "antiques" in the proper sense of the word, but it was incorrect to talk of furniture, belonging, say, to the Elizabethan period, or even of the architecture of the Egyptians, as "antique": they would be more properly characterised as "ancient." Then came the question how far back must the archæologist of the present day go in order to arrive at a period whose productions could justly be called "ancient"? Opinions differed on that point, but he was inclined to draw the line of demarcation between ancient and modern at the end of the sixteenth century. To be a good archæologist was no easy task, for it needed a rare combination of qualities. A great deal had been said of late years about restoration. Now the most important point in connexion with the restoration of a building was to make the preservation of the original character of it the main point, neither adding to nor taking from it a single detail. Of course, in cases where enlargement was demanded, the architect should have free play, so that the modern addition should have a character of its own. Proceeding then to the more immediate subject of his paper, Mr. Nash pointed out that, small as is the county of Middlesex, it contains a great many interesting remains, foremost amongst which are many specimens of Roman work, and such buildings as Westminster Abbey, the Temple Church, St. Bartholomew's Smithfield, and St. John's Chapel in the White Tower. With regard to St. Bartholomew's, Mr. Nash asked where were the church restorers? Had they all gone out of town? It would seem so, from the condition in which they suffered this church to remain. What a creditable and delightful thing it would be to see the remains of this church restored to their pristine condition! It was true that something was done some years ago, and it was good so far as it went, but it was very meagre in extent, after all. With regard to St. Giles's, Cripplegate, the whole of the interior had been well restored, and as there were funds available, he hoped to see the outside of this church, particularly the fine tower, judiciously restored. The tower was of the fourteenth century, although it contained some sixteenth-century insertions, and the top stage was missing. After noticing the churches of St. Mary Aldermary, St. Andrew Undershaft, and St. Mary, Hadley, Mr. Nash spoke of the necessity for watchfulness on the part of archæological societies in order to avert the evil influences which threatened the existence of ancient remains. Destructive agencies were always at work. He was not an advocate for letting any good work go to decay through neglect, but it might just as well be allowed to perish of neglect as to disappear by more immediately-effective destructive processes. However carefully they might guard the ancient remains which were still left them, modern necessities would inevitably remove some of them year by year, and he therefore thought it would be a very good thing if some simple dictionary, or rather catalogue, of ancient remains extant in the county, could be compiled. For instance, under the head "Crypt," which he would define as "an underground chamber, vaulted," he would enumerate and describe all the crypts known to exist in the country.

In the course of an interesting discussion which ensued,

Mr. J. G. Waller, F.S.A., on the subject of restoration, criticised the mode of procedure often adopted by church restorers in dealing with fragments of brasses. It was a common practice, with the view of preserving such fragments, to affix them to the wall of some part of the interior of the church, but, translated in this manner, unaccompanied by the slabs on which they were found, they were generally wholly unintelligible, although, before their removal, the *matrices* existing in the slabs furnished a clue to their interpretation as a whole. He thought that the proposed catalogue or dictionary of county antiquities would be of the utmost value, but he doubted whether its preparation was a work that could be undertaken by the Society.

Mr. S. W. Kershaw (Hon. Sec.) referred to the existence of wall paintings in old churches, instancing those in the chapter-house of Westminster Abbey, depicting the Apocalypse, as interesting specimens.

Mr. Barron, F.S.A., in illustration of the necessity for a catalogue of county antiquities, spoke of the continual demolition of the old overhanging timbered houses of London.

The Rev. Hawley Clutterbuck mentioned the recent discovery, in the church of St. Lawrence,

Reading, of a palimpsest brass. One side was found to be the brass of a benefactor of the Charterhouse, Sir Thomas Popham, he thought. It had probably been removed when the Charterhouse was given over, and, finding its way into the brass shop, had emerged with the other side engraved as the brass of a citizen of Reading. This brass had now been removed from the floor of the church at Reading where it was found, and hinged to the wall, so that both sides could be examined. Incidentally Mr. Clutterbuck mentioned that the parish church of St. James's, Clerkenwell (built early in the present century), was about to be "restored and beautified," and he trusted that advantage would be taken of the opportunity that would thus be offered to bring to the light of day some of the interesting ancient monuments at present preserved in the vault of the church, among them being that of the last prior of the Order of St. John of Jerusalem.

Mr. Blashill, in the course of a few observations, said that some such catalogue as was suggested by Mr. Nash for Middlesex was much wanted for every county. They would take time to prepare, of course, but many helpers could, he thought, be found. Such catalogues might be usefully supplemented by archæological maps to a large scale, coloured so as to show the period to which the remains existing in any part of the county belonged.

The Chairman brought the discussion to a close by tendering the thanks of the meeting to Mr. Nash for his interesting paper, and announced that the next meeting of the Society would be held on Monday, December 12, when Mr. Rivington will read a paper on the Stationers' Company.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

The first meeting of the session 1881–1882 was held on Wednesday last, the Rev. S. M. Mayhew in the chair. The discovery of a Roman villa, evidently of considerable extent, at Wingham, Kent, was announced. Aided by a grant from the Kent Society, the villa is being excavated by Mr. Dowker, and already three rooms with tesselated pavements have been uncovered, while a fourth has a hypocaust. The work is very fine, the walls in one room being lined with mosaics. Funds are much needed for the prosecution of the researches.

Mr. Loftus Brock also reported the efforts made by the Association with respect to the safety of Stonehenge since the meeting there last year, and read a letter from Sir E. Antrobus, the owner, who disclaimed all intention of "restoration" in the works undertaken there by him. These are but for the safety alike of the monument and the visitors. Nothing permanent will be done until the spring.

Mr. Way exhibited some Mediæval pottery from Southwark; the Rev. S. Maude a unique denarius of Gallienus, with the name of Germanicus on the reverse; and Mr. R. Soames a drawing of remarkable sculpture in Brixworth Church. It is called an eagle, and is supposed to have been brought from the Roman villa which existed close to the building, where it is now built into one of the walls. Mr. G. R. Wright, F.S.A., exhibited some drawings of Mulgrave Castle, Yorkshire, and described some of its curious windows.

The first paper was on the "Bourg el-Ziffar, Cairo," by Professor Hayter Lewis, F.S.A. This is one of the angle bastions of the wall of Cairo, now almost covered by sand. It has an octagonal central chamber, 26 ft. in diameter, formed of neatly-cut stone. It dates probably from the time of Saladin.

Mr. J. W. Grover, F.S.A., in the discussion which followed, alluded to the appearance of the pointed arch in a developed state here, and to the magnificent museum of Egyptian antiquities at Boulak.

The second paper was by Mr. Gordon M. Hills, and was on the "Measurements of Ptolemy applied to the Northern Part of Britain." He identified Hornsea Lake, east coast of Yorkshire, as Ptolemy's Portus Sinus, and Penrith as the starting-point of the tenth iter; Salava, the second station, he placed at Gallaber, near Trebay.

National Portrait Gallery.—This gallery has lately been enriched by the addition of several important portraits bequeathed by the late Lord Hatherley.

THE FORCE OF THE LATE GALE.

The opening meeting of the Meteorological Society for the present session was held on the 16th inst.; Mr. G. J. Symons, F.R.S., president, in the chair.

The evening was devoted to an account of the gale which passed across the British Isles Oct. 13th and 14th, 1881, which had been prepared by Mr. Symons, with the assistance and co-operation of Mr. C. Harding and other gentlemen. There is evidence of the storm being formed in the Atlantic about 150 miles south of Nova Scotia on Oct. 10th, and that at noon on the 13th there was a considerable disturbance about 600 miles west of Galway. At that time there were scarcely any instrumental indications in the British Isles of the coming storm. The curves of barometric fluctuation show very plainly the advance of the depression from west to east, for while at Valentia the minimum occurred at two a.m. on the 14th, on the east coast of Norfolk it is recorded that it did not occur till four p.m. This fall, coupled with others, seems to indicate an easterly progression of the barometric minimum at nearly forty miles per hour. The area over which injury was produced was very large, and although not without precedent, it was happily rare. The record of 56 lb. per square foot at the Royal Observatory, Greenwich, was the highest ever registered in that locality, and close by thirty-five trees were blown down in the park, and 15 ft. blown off the top of a spire which had been erected about forty years, the stone of which shows no sign of decay, and which had retained its position almost, if not wholly, by the gravitation of its mass. The general opinion seems to be that the structural damage over the greater part of the country was by no means unprecedented, and in the greater part of Ireland and the south-west of England was not even of an unusual character; but along the east coast, and in the east midlands, the damage was excessive, and on the north-east coast unprecedented. In Scotland the destruction of trees was enormous.

EXPERIMENTS WITH CLOSET TRAPS.

On Saturday, the 19th inst., and on Monday, the 21st, a series of public experiments were made on the premises of Messrs. Pullen & Son, Penton-place, Newington Butts, with the view of testing the comparative efficacy of improved forms of the ⊐-trap, Beard & Dent's round pipe ∩-trap, and Smeaton's "Eclipse" trap. Each of these traps was placed in turn beneath one of "Underhay's pattern" valve-closets, made by Messrs. Bolding & Son, of South Molton-street, and was tested, firstly, for resistance to "unsealing" by what Mr. P. J. Davies (who assisted Messrs. Pullen in the conduct of the experiments) called "momentum," and, secondly, for its power to withstand syphonage due to a vacuum. All the traps tested were 4 in. size. Mr. Pullen, Mr. Davies, and others, maintain that a round-pipe trap, where used beneath a valve-closet, is extremely liable to become "unsealed," owing to the momentum of the water rushing through the valve, when the latter is suddenly opened, being so great that so much water is carried out of the trap that sufficient does not remain behind to "seal" it, the momentum with which the water passes into the trap being aided in effecting this undesired result by the facility which the round-pipe trap possesses of being rapidly cleared,—in itself a good quality, inasmuch as it ensures greater cleanliness than is possible with the ⊐-trap, although Messrs. Pullen & Davies claim that the improved form of the ⊐-trap is quite as clean in use as the round-pipe ∩ or ℧ trap. We do not think they can succeed in establishing this part of their contention; but their failure to do so will not prevent the use of the ⊐-trap in positions where it can be proved that the round-pipe trap is likely to prove less reliable than one of the ⊐ form. The experiments which we witnessed went to show that under the condition as to water-supply hereafter stated, Beard & Dent's round-pipe trap and Smeaton's "Eclipse" are neither of them proof against being unsealed in the manner indicated by the momentum of the rush of water from a valve-closet when the valve is suddenly lifted. The ⊐-traps shown in action seemed, however, to be proof against being unsealed in the same way. It should here be observed, though, that the water-supply was not laid on in the ordinary way to the closet used for the tests, the water being conveyed into the basin by a piece of rubber tubing as required. Had the water supply been connected with the closet so that, simultaneously with the opening of the valve of the latter, water could have been admitted into the basin, the test would have been more conclusive, for some of the fresh water admitted into the basin would pass through the valve before the latter was closed, and so help to preserve the seal of the trap. All the traps named were afterwards subjected to tests to resist being unsealed by "syphonage." The tests were as follow:—Each of the traps was placed in its turn beneath the valve-closet before named, the out-go being connected by an arm 4 in. diameter and about 18 in. long, running horizontally from the trap to the vertical soil-pipe, which was also 4 in. in diameter. At 20 ft. above the point of this junction was another arm leading from a ℧-trap on which was fixed a Sharp's hopper closet. In this hopper the water to the extent of about a pailful was retained by a plunger until discharged. With a cap over the head of the vertical soil-pipe, and with the valve of the closet held open, the vacuum caused in the arm connecting the valve-closet with the soil-pipe by the rapid passage of the water downwards past the junction was sufficient to unseal Beard & Dent's trap, and Smeaton's also, the ⊐-trap alone remaining sealed. The same tests made without the cap on the head of the soil-pipe, and with the valve of the closet closed, had the same results, with the exception that Beard & Dent's and Smeaton's traps did not lose so much water as under the previous conditions. All the foregoing tests were made with all the traps unventilated. In a subsequent test, the round-pipe or ∩-trap was provided with a 2-in. ventilating-pipe between the water in the trap and the junction of the arm with the down soil-pipe, but charges of water passing down the latter under the same conditions as before did not disturb the water in the trap,—proving that where an ∩-trap is used, it needs to be sufficiently ventilated. The tests were made with appliances fitted up for the purpose in connexion with a lofty scaffolding. A large number of persons interested in the matter were present on Saturday, but there was by no means unanimity of opinion as to the results obtained. We may add that the appliances and the scaffolding which supports them will remain up some days longer, and Messrs. Pullen invite inspection of the same by architects, builders, plumbers, and others interested in the question.

"MODERN EASTBOURNE."

In the notes descriptive of the progress of Eastbourne, lately given (p. 601, *ante*), the sum named as the cost of Mr. Shone's sewerage works there should have been called 4,000*l.*; the sum named by the writer,—16,000*l.*,—represents about the total cost of the town's drainage, irrespective of the cost of Shone's ejectors. An "Inhabitant of Eastbourne," proud of its progress, thinks we might have given even a fuller and more complete account than we did. No doubt of it; and still have left unsung some of the beauties and conveniences of this flourishing watering-place. Of course; but this is not intended. All that is proposed in such notices is to give a general idea of what is going on in the places mentioned. As to the washing away of more than 200 yards of the new sea-wall during the late gale, "concerning which the ratepayers are very sore," this occurred after our commissioner's visit. Our present correspondent says:—"All Saints, a stone church at the back of the Grand Hotel, is one of the handsomest churches, but it is built on lower ground than its surroundings, and so does not appear to advantage. Another church is talked of in the stead of the chapel-of-ease to St. Saviour's, which is near or on the site of the new town-hall. On the Marsh a large church, All Souls, is in course of erection, built of red and white brick, to seat 800 or 900; the architects are Messrs. Parr & Strong, and the builder is Mr. Peerless, who also is contractor for the Cavendish. The church stands in a very populous neighbourhood, and is the gift of Lady Victoria Wellesley, who intends to spend 20,000*l.* on it and its endowment. St. Saviour's, without the tower, is the gift of Mr. Whelpton, the father of the present incumbent; the tower was added by subscriptions and offertories. There have been several large gifts towards All Saints. Altogether the private

liberality towards church-building in Eastbourne has been unusually munificent. The Bishop of Chichester spoke of it the other day. Christ Church has just had aisle and apse added; and there is a new Mission-room at Norway, an outlying district. Trinity Church has been much improved by the green fence being cut down, so that the church as now seen forms quite a picturesque object in the Seaside-road. There is also a Workmen's Hall provided by the liberality of Mr. Leaf, containing a large room, and tea, coffee, and reading rooms, in the Seaside-road; and, further on, just before Christ Church, is a coffee-palace; there are also two coffee-stalls. There are several handsomely-built chapels, and also a Protestant service in French once a week. The principal shops are in the Terminus-road, and the place possesses the doubtful advantage of shops built by threes and fours in among the other houses; whereas a whole street or row of shops would have formed an attractive lounge for visitors, as the King's-road at Brighton. In Eastbourne there is not one shop facing the sea. The place is insufficiently lighted at night, so many trees make it difficult to diffuse the light; but what there is is not good, and the darkness is more than visible,—it may be felt."

SEVEN DIALS.

A NEW Mission-house for the Seven Dials District of St. Giles's parish has been erected in Short's-gardens, in connexion with the London Diocesan Home Mission. The work in this place (which has existed for more than twenty years) has been hitherto carried on in a small and incommodious room divided from the street by a bakehouse attached to a baker's shop adjoining, and which was very unhealthy through defective drainage, badly lighted, and much out of repair. This has been all cleared away, with the exception of the side and back walls, and the new building now extends the whole length of the site, being about 80 ft., and has a frontage to the street of simple First Pointed character in stock bricks, the arches and jambs being of red brick and Bath stone. The design consists of a main gable finishing the end of the open-timbered roof to a bell-gable at the side. The building is well lighted from the roof by dormers between the principals. The drainage has been entirely reconstructed, and the premises have been made healthy. The opening took place on Tuesday, the 1st inst. (All Saints' Day). The architect was Mr. William Milford Teulon, of Upper Woburn-place; and the builder, Mr. Andrew Killby, of Appold-street, Finsbury, who has done his work well.

SCHOOL BOARD SCHOOLS IN THE METROPOLIS.

AT a recent meeting of the School Board for London, a report was brought up from the Works Committee, and ultimately adopted, containing the following recommendations:—

"The Committee have invited tenders for the erection of a school to provide accommodation for 1,200 children on the site in Homerton-row (Hackney). The Committee recommend that, so soon as the plans shall have been approved by the Education Department, the lowest tender, that of Mr. C. Wall, of Lots-road, Chelsea, amounting to 11,400*l.*, be accepted. Cost per head of school buildings only, 7*l.* 6*s.* 9*d.*; total cost per head, 9*l.* 10*s.*

The Committee have also invited tenders for the erection of a school to provide accommodation for 1,000 children on the site in Heber-road, Dulwich. The Committee recommend that, so soon as the plans shall have been approved by the Education Department, the lowest tender, that of Mr. W. Tongue, of Plumstead, amounting to 10,619*l.*, be accepted. Cost per head of school buildings only, 8*l.* 13*s.* 5*d.*; total cost per head, 10*l.* 12*s.* 4*d.*

On the 15th of August last, the Education Department sanctioned the provision of 400 additional places on the site in Bath-street, City-road. As the school which was then being erected on this site was nearly completed, and as Messrs. Wall, Brothers, the contractors, were willing, while their plant was on the site, to carry out the enlargement on the contract schedule of prices, the committee instructed them to proceed with the work. They recommend that the action taken by them be confirmed; and that the tender of Messrs. Wall, Bros., based on the contract schedule of prices, and amounting to 4,890*l.*, be accepted. Cost per head of school buildings only, 10*l.* 12*s.* 1*d.*; total cost per head, 10*l.* 19*s.* 6*d.*

HOW TO BUILD.

(FROM A JERRY BUILDER'S POINT OF VIEW.)

Being a sure Recipe for Rheumatism, Fever, Cold, &c.

First buy your ground; to be, of course, the cheapest lot
you've seen:
For choice, an ancient brickfield, or where once the ground
has been
Dug out for sand or gravel, with the holes all newly fill'd
With rubbish from the dust-heap, such as cats, untimely
kill'd
Old bottles, cabbage-stalks, and tins,—to name them all is
hard,—
Though you'll find the chief components in the dust-bin
in the yard.
Now, ere proceeding farther, it is best to first procure
A copy of the by-laws for the district; then be sure
To spend each leisure moment trying how to circumvent,
Within the law, if possible, their very plain intent.
Next excavate, put concrete in,—here 1 to 12 will do;
Then start your footings,—*any* bricks! they're not exposed
to view.
For mortar, take a little lime, some sand, some ash, much
earth;
Be sure, when mix'd together, of the latter you've no
dearth.
For damp-proof, lay a course in tar, and, just to save a
brick,
Plug up all holes with concrete in the inside work, but
pick
Your best bricks for the facings; you may halve the
headers, too,
Have a straight joint up the centre, with, now and then,
"a through."
Get first-floor joists on in a week to hold the walls
together,
Get slated in in three to keep the *stair-work* from the
weather.
The doors make thin, two from a deal's the plan you
understand,
The only season'd work to be that purchased second-hand.
You'll connect the drains, of course, at the end next house,
and thence
Run them a few feet underground and leave, to save
expense;
You'll fix your cistern where you choose, and take the
utmost care
That afterwards it can't be reach'd for cleansing or repair.
You'll let the same supply the bath, the closet,—all the
lot,—
Take waste and soil pipe down in one to where the drains
are not.
But finish your fronts with care, with stone dressings,
bays, and strings;
Inside with showy paper, deep cornice, and such like
things.
And mortgage it floor by floor after the manner of old,
And put up a bill when finish'd, "House to be let or sold."
Then when you've secured a victim,—a tenant he's call'd
by you,—
You'll migrate with a peaceful heart to "fresh fields and
pastures new."

G. H. L. S.

PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

4,840. J. B. Spence, London, and E. Ormerod, Belvedere. Manufacture of concrete for receiving an enamelled surface. Nov. 4, 1881.

4,845. J. H. Johnson, London. Apparatus for flushing water-closets and urinals, &c. (Com. by T. Guinier, Paris.) Nov. 4, 1881.

4,848. H. Gibbons and A. Anthony, Hungerford. Locks and latches. Nov. 5, 1881.

4,859. J. Adams, Sheepbridge, and J. Bonehill, Rotherham. Fire-grates, &c. Nov. 7, 1881.

4,862. J. Harley, Glasgow. Astragals and sash-bars for glass, &c. Nov. 7, 1881.

4,876. W. Teague, Illogan. Ventilating and clearing places of gas, smoke, foul air, &c. Nov. 8, 1881.

4,878. J. P. Bayly, Paddington. Appliance to render structures proof against strain. Nov. 8, 1881.

4,893. R. H. Clive, Birmingham. Locks and latches. Nov. 8, 1881.

4,902. J. F. Smith, Leicester. Constructing bridges, &c. Nov. 9, 1881.

4,927. E. de Pass, London. Manufacturing artificial stone. (Com. by R. H. Stone, Brighton, Victoria.) Nov. 10, 1881.

4,928. J. Thompson and C. Morris, Birmingham. Stoves for heating, &c. Nov. 10, 1881.

4,929. H. J. Haddan, Kensington. Stoves. (Com. by J. Schneur, Paris.) Nov. 10, 1881.

4,937. F. R. Baker, Birmingham. Spring hinges and door-springs. Nov. 10, 1881.

NOTICES TO PROCEED

have been given by the following applicants, on the dates named.

Nov. 8, 1881.

2,935. J. Louis, London. Supporting and protecting persons outside buildings for window cleaning, &c. July 5, 1881.

2,969. E. Aldous, Peckham. Apparatus for ventilating buildings. July 7, 1881.

3,067. J. Gilmore, Norwood, and W. R. Clark, Peckham. Apparatus for inducing an outward draught from chimneys, &c. July 13, 1881.

Nov. 11, 1881.

2,898. F. Grinnell, Providence, U.S.A. Apparatus for extinguishing fires in buildings, &c. July 2, 1881.

2,945. F. D. Harding, Hampstead. Applying decorations to door and other panels. July 5, 1881.

3,055. C. M. Scott, Dalkey. Disinfecting apparatus. July 12, 1881.

4,191. G. J. Cox, Maidstone. Gas cooking and heating stoves. Sept. 29, 1881.

ABRIDGMENTS OF SPECIFICATIONS

Published during the Week ending November 12, 1881.

1,327. T. Morgan, Westminster. Magazine heating-stove, with flues for circulation of air and ventilation.

This is a vertical stove in which the fire is carried in an internal cylinder, and the air passes between the internal cylinder and the outer cover, through flues in which it is heated. (Com. by O. Eiterich, Nuremberg, Bavaria.) March 24, 1881. Price 6d.

1,432. W. Morgan, Bristol. Deodorising water-closets.

A pipe is led from the upper part of the pan of the closet to the eaves of the house in which a gas-burner or oil-lamp is placed, which creates a draught and draws off all the effluvia through the pipe. April 1, 1881. Price 6d.

1,449. A. MacPhail, London. Firegrates, stoves, &c.

The grate has a corrugated bottom and backing of fire-clay, and behind and above the grate is a space, through the front wall of which are a number of holes. The lower end of this space opens into the flue. The front bars of the grate are vertical, and curved over towards the fire, and a screen is placed against the bottom bar, on which the vertical bars rest with holes, so that, when the fire is lighted, the air passing through these holes drives the gases and smoke through the holes in the wall into the space behind, where they are consumed. April 2, 1881. Price 6d.

1,466. J. Sainty, Wisbech. Apparatus for lighting fires.

A blowing apparatus, containing bellows worked by a lever, forces air into a wind chest from which a flexible pipe conveys the wind to a lamp. This consists of a number of flat wicks, so placed that when they are lighted the wind propels forward a horizontal sheet of flame. The grate need, therefore, only to be filled with coal, no wood, &c., being required. (*Pro. Pro.*) April 4, 1881. Price 2d.

1,473. G. B. Jerram, Walthamstow. Pipes and syphon-boxes, or traps for drains, &c.

The sockets and spigots of the pipes are tapered, the space between being filled with soft material. The syphon-boxes are made with a loose cross partition, which forms the seal. This is made to slide up and down as required, and may be altogether removed for cleaning purposes. April 5, 1881. Price 6d.

1,475. W. H. Dandy, Great Driffield. Dwarf window-blinds or screens.

These are made of a number of vertical laths ranged side by side, which are ornamented or cut as required. They are secured to narrow strips of wood placed at the top and bottom. April 5, 1881. Price 4d.

1,484. C. Haarburger, London. Expanding fire-screen.

This is composed of a number of strips of metal or wood, &c., which are laid diagonally over each other, and articulated together so as to be capable of expansion. A curtain or backing of cloth may be used to prevent the heat passing through the interstices. (*Pro. Pro.*) April 5, 1881. Price 2d.

1,485. G. Tall & J. Daddy, Kingston-upon-Hull. Compound for preventing escape of steam, gas, water, or air, from joints of pipes, &c.

This is composed of ordinary brickyard clay, 12 lb.; linseed oil, 2 lb.; black-lead, 2 lb.; pipeclay, 2 lb.; and whitening, 2 lb. These ingredients are mixed and ground together, and sufficient water is added to make a paste, which keeps the joints perfectly tight. April 5, 1881. Price 2d.

1,520. R. Applegarth, London. Decorating bricks, tiles, &c., by the use of mica.

Enamel, dissolved in water, is spread upon the surface. Upon this is a second coating of gummed water, and powdered mica is then sprinkled through a sieve upon this. The decorated article is then placed in a muffle, and baked. (Com. by E. A. L'heureux, Paris.) (*Pro. Pro.*) April 7, 1881. Price 2d.

1,528. W. T. Sagg, Westminster. Uniting gas, water, and other pipes or tubes.

The ends of the pipes to be joined are gripped between

* Compiled by Hart & Co., patent agents, 28, New Bridge-street, E.C.

an internal ring of soft metal and two external rings or sockets with a flange, through which bolts are passed to secure them together. (*Pro. Pro.*) April 7, 1881. Price 2d.

1,545. J. C. Mewburn, London. Apparatus for moistening, cooling, and purifying air.

Water is held in a horizontal pipe, in the upper part of which are a number of atomising cocks. Compressed air or steam enters the pipe, and forces out the water in an atomised state, which cools and purifies the air. (Com. by A. J. Desmarest, P. Cosnard, E. Sée, and P. Sée, Lille, France.) (*Pro. Pro.*) April 8, 1881. Price 2d.

1,561. W. Lawley and J. Lawley, West Bromwich. Metallic road gutters.

To render road gutters capable of being cleansed easily, the trough-shaped body is fitted with a hinged covering plate, which can be turned back, exposing the whole width of the gutter, and rendering the operation of cleansing easy of accomplishment. (*Pro. Pro.*) April 9, 1881. Price 2d.

3,388. C. Detrick, Philadelphia, U.S.A. Continuous underground pipes.

These are formed by excavating the ground to the required size and then forming within, upon cores of the desired shape, a mass of plastic material that will subsequently solidify, and when the cores are removed will form a pipe, after which the excavated substance may be replaced in the trench. August 4, 1881. Price 8d.

VINEGAR MANUFACTORY, BREWERY-ROAD.

Large new premises are fast approaching completion in the Brewery-road, Caledonian-road, for Messrs. Crosse & Blackwell, of Soho-square, to be devoted to the extension of their present vinegar manufactory, which they face in the same road. A building lease having been granted by the Corporation, substantial premises covering an area of 20,000 superficial feet, inclusive of the yard, have been erected, consisting of two tun-rooms, each of which is 88 ft. by 50 ft., with a cooperage, loading-stage, and warehouse over on the one side of the yard, and a foreman's residence, with stables and a van-shed, &c., on the other side.

The building is faced with red pressed bricks from the Adderley Park Brick Company, with Portland Stone bands and dressings, the spandrels of arches being filled in with ornamental bricks from the same company.

The tower, which is 75 ft. in height, is the chief object of importance, and contains the staircase to warehouses, with cloak-rooms and lavatories on each alternate landing.

A subway will be formed, permission having been accorded by the parish authorities, under the roadway, through which it is contemplated to carry steam, water, or gas-pipes, as also to supply a means of communication between these premises.

The architects are Messrs. Roumieu & Aitchison, of Lancaster-place, Strand; and the contractors, Messrs. David King & Son, of Billiter-avenue.

BUILDERS' BENEVOLENT INSTITUTION.

The fifty-sixth election of pensioners in connexion with this Institution was held on Thursday at Willis's Rooms, St. James's, the President, Mr. Ex-Sheriff Burt, J.P., in the chair. There were six candidates,—five men and one woman. It was originally intended to elect only two men and one woman, but in consequence of the large amount subscribed in connexion with the recent anniversary festival,—the success of which was due, in no small degree, to the zeal of the Secretary, Major Brutton,—it was determined by the committee to elect three men. The candidates were:—John Willis, aged 65 (second application), who received 2,307 votes; Charles Henry Wood, aged 63 (second application), 1,819 votes; John Loat, aged 84, 1,412 votes; Jonathan Parsons, aged 67, 432 votes; John Cooper, aged 78, 625 votes; and Amelia Stone, aged 60, widow of William Stone (second application), 2,897 votes. Shortly after the close of the poll at three o'clock, the scrutineers (Messrs. Thomas Stirling and T. F. Rider) reported the results of the voting as above given, and accordingly the Chairman declared the successful candidates to be John Willis, Charles Henry Wood, John Loat, and Mrs. Stone. Votes of thanks to the chairman and scrutineers brought the proceedings to a close.

The Number of Failures in England and Wales gazetted during the week ending Saturday, November 19th, was 229. The number in the corresponding week of last year was 250, showing a decrease of 21, being a total decrease, in 1881, to date, of 859.—*Kemp's Mercantile Gazette.*

TEWKESBURY ABBEY.

Sir,—I am glad attention is being called to this restoration, and hope you will use your influence to stop money being spent on the interior till the exterior is put in fair repair.

The north arcade to the clearstory should be dealt with first. Surely no society would object to the removal of this wretched modern work.

The turrets at the west end are the most beautiful I have ever seen, and I confess I should like to see the west window out, and, if there is any evidence, the part restored that is deficient. Where aisle roofs form the clearstory at present, this looks weak, and spoils the effect of the beautiful west end.

Who is responsible for the horrible black brick paving round the abbey, that seems suitable for some cheap local Board, but is unworthy such a building?

I was surprised to hear there was no clerk of works employed, the only *man* mason I saw there telling me it was left to his master.

A number of youths were working mouldings far beyond their skill, and a comparison of the sections of the new work with the old showed the want of careful supervision.

On the nave clearstory a youth was whistling a tune and rubbing a piece of card wire at random over a moulding, altering its profile entirely. I looked round for a brick, and if I had found one at the moment I fear I should have been made acquainted with the interior of a very different building.

Large sums have been spent on the building, and it is unfair to the architect, his time being taken up so much with committees, to leave the work without supervision.

If it is want of funds, I feel sure that the class to which I belong would subscribe towards the salary of a competent man experienced in Gothic masonry, the bedding and jointing of stones and their selection, and who by his reading and observation would make the construction rather than the history of the place his study.

I regret that too many of my brethren neglect the construction, and though talking glibly of the abbots, can tell me nothing of the tooling or jointing of the different periods.

A Clerk of Works.

CONTRACTS AND QUANTITIES.

Sir,—Being lowest for a tavern to be erected at Fulham this week, under a firm of architects well known, who supplied their own quantities, I found the contract terms were to include the following:—

"The quantities were to be taken as correct, opportunity being given to the contractor to verify them before signing." "In case of any dispute between employer and contractor, the architect's decision to be final, binding, and without appeal."

On seeing this, I applied for opportunity to verify the quantities, which was refused, as the client (who was present) insisted on the matter being settled at once. As the architect refused to incorporate the quantities with the contract, I refused to sign, and the matter accordingly fell to the ground, as far as I was concerned.

I want to know, sir, whether this form of contract is legal, as I am informed it is not, and can be upset in law. It seems to me inconceivable that a man who insists on being paid 2½ per cent. for the quantities he supplies should not be responsible for their accuracy.

Young Builder.

Sir,—From time to time I have observed advertisements emanating from H.M. Office of Works, inviting builders to tender, in which the following paragraph invariably appears:—"The Commissioners do not hold themselves responsible for the accuracy of the bills of quantities, which must be verified by the persons desirous of tendering."

It is a marvel that builders can be found willing to tender upon such objectionable terms as these. In the first place, a builder desirous of tendering has no option but to take the quantities supplied to him by the Commissioners, and in the absence of the name of the quantity surveyor there is nothing to indicate that the quantities have been prepared by an experienced person; in fact, one might very fairly infer from the disclaimer of responsibility on the part of the Commissioners that such an eventuality as the quantities being found inaccurate had presented itself to their minds.

I am not aware whether these quantities are prepared by a salaried surveying clerk in the Office of Works, or by an outside quantity surveyor, charging his commission in the usual manner. If the former, the Commissioners are acting in a high-handed manner and a spirit of unfairness, by binding down the builders to accept as correct the quantities prepared by their own clerk, which, in the event, may turn out to be inaccurate. If the latter, there is no occasion to disclaim responsibility where none exists, as, in the event of inaccuracies in the quantities, the builder has his remedy against the surveyor whom he pays.

I have assumed that inaccuracy means "short quantities"; cases of "full quantities" seldom or never arise. But the worst point in the advertisement is the compulsory verification of the quantities. If this is to be honestly done, it is tantamount to retaking-out the quantities, the expense of which must, of course, be borne by the builders, and I should like to know, supposing builders could be found willing to incur this expense, whether the Commissioners would allow the time and afford the facilities necessary for such an operation to be performed? If not, it is a farce to talk about verifying quantities, and as the Commissioners must know that, in fact, it is not and cannot be done, they in effect obtain tenders in the usual way, but with a reservation very much in their favour, and against the builders.

Of course, as long as there are builders who are willing to be bound hand and foot to quantities they know nothing of, so long will this class of advertisement continue to be put forth; but it rests with the builders themselves, by declining to tender upon such arbitrary terms, to effect the withdrawal of this kind of invitation to tender.

Sidney Young.

CONVICT LABOUR.

Sir,—Referring to the *Builder* of the 5th inst., I was much interested in your article on "Convict Labour as applied to the Drainage and Reclamation of the Irish Bogs." It appears to me that the influence of your journal might be made the means of agitating for a Parliamentary inquiry as to the practicability of the measure, and if possible in the ensuing session.

It is probable that the question of the maintenance of military surveillance of extra strength during the present disaffected state of the country, and the possible connivance of the convicts in any alarm of outbreak, might have some weight attached to it. Otherwise, as you observe, the *pros* of the question will outweigh the *cons*. If the movement resulted in a revival of the peat fuel manufacture, as it doubtless would, this should also be a source of profit to the Government, though as a commercial undertaking it is usually profitless, owing probably to the amount of labour required in draining, cutting, stacking, wheeling, and generally manipulating the peat. The accomplishment of this is part of the scheme, and the wholesale shipment of the peat fuel to London would materially abate the smoke nuisance of the metropolis, and more or less bring the "coal ring" to sense.

P. A. Williams.

BIRKENHEAD TOWN-HALL COMPETITION.

Sir,—Permit me to call your attention, and that of the referee (Mr. Barry), to a feature of the above which I fear has not received the attention it deserves.

You are doubtless aware that the first competition is for sketches only, five of which are to be selected and finally worked out by their authors, Clause 5 of the Instructions saying,—"In order to obviate the possibility of the sketch designs lodged in the preliminary competition being made use of by the competitors invited to take part in the final competition, such sketch designs will not be allowed to be seen by any one except the council and referee, and will be retained until the final competitive designs have been sent in."

This seems very fair, but it assumes a very different aspect when the fact is considered that the said council contains two architects and the father of a third who will likely be competitors, and yet have every opportunity of seeing the sketches and making such use of the information, as they may see fit. Surely, Mr. Editor, the council should not permit these gentlemen to see the sketches.

C.

COSTLESS POWER.

Sir,—Most cities are supplied with water by gravitation; and here, it appears to me, is a source of power which is wasted, and which might be taken advantage of in the production of the electric light. In such cases as those of Edinburgh and Glasgow, where the supply is derived from a great elevation, the pressure must be considerable, and that power might be made available without detriment to the water-supply of these cities. I am not prepared to go into details, but must content myself with throwing out a hint which may be taken advantage of by those who possess more practical knowledge of such matters than I can boast of.

Signet.

The Fire in Essex-road, Islington.—Messrs. Jeffrey & Co., paperstainers, write to say that the fire which occurred on their premises on Monday morning was confined to a portion of their factory, and that most of their blocks and stock was saved. They have made arrangements to carry on their business as usual.

SCOTCH NEWS.

Montrose.—The old houses on the north side of the new street leading to the North British Railway Station have been removed. Ever since the street has been opened these rickety old buildings have been a perfect eyesore, and their removal will greatly improve the appearance of the street. The ground on which they stand belongs to the railway company; but it is understood that an offer has been made for it for feuing purposes by the North of Scotland Bank.——At a recent meeting of the Police Commission, the Provost presented a report made by Mr. Aitkenhead, architect, on the baths proposed to be erected in Bridge-road. As to the cost of the structure, Mr. Aitkenhead says,—"A very plain but substantial building, consisting of a model first-class pond, with thirty dressing-boxes and gallery, say five or six well-appointed private baths, three shower, one douche, one spray, and one vapour bath, large lavatory, water-closets, towel-boxes, entrance-hall, ticket-office, waiting-room, master's house of three apartments, enclosing walls, gateways, foot-pavement, as also a wash-house, boiler-house, with stalk, say 50 ft. high, engine-room, and coal-shed, and, inclusive of all engineering work and other necessary fittings, will, I consider, cost about 2,450*l.* I deem it also advisable to suggest, considering the conspicuous and isolated nature of the site, the building on which will be exposed to view on all sides, and situated as it is on one side of the principal entrances to the town, that a further sum of say 200*l.* be expended by way of moderately embellishing the external appearance." The report was referred to the committee for consideration.

Dundee.—The *Railway News*, noticing Mr. Barlow's plans for the new Tay Bridge, says:—The new bridge substantially agrees with that designed by Sir Thomas Bouch, though with several well-marked differences. Foremost amongst the latter must be named the provision for a double line of rails, by which a wider base is secured, and the strength of the structure to resist lateral pressure is proportionally increased. Another special feature is the use of wrought-iron throughout for the piers on which the girders rest, and as the substructure is 3 ft. higher, and the maximum height 11 ft. less, the highest of the central piers, besides being doubled in lateral strength by the provision for two lines of rails, will be individually about 14 ft. shorter than those which fell. As the greatest height is only continued over four of the principal spans, a better gradient towards the Dundee side is secured, a fall of 1 in 114 being begun at the fifth 245 ft. span, so that the extreme north pier of the largest spans will be considerably shorter than the corresponding pier in the former bridge. On the Dundee shore portion of the new bridge brick piers will be used, and in many points of detail, such as the form and arrangement of the iron pillars, the design differs from the bridge now so far existing. The works on the existing bridge will not be utilised further than that the piers standing in the water may prove useful as so many solid *points d'appui* from which the work of erecting the new bridge can be carried on.

Books.

The Science of Building: an Elementary Treatise on the Principles of Construction. By E. Wyndham Tarn, M.A., Architect. Second Edition. London: Crosby Lockwood & Co. 1882.

Practical Geometry for the Architect, Engineer, Surveyor, and Mechanic. Second Edition. Same author. Same publishers.

The appearance of new editions of these volumes serves to justify the high commendations they have already received at our hands. To the "Science of Building" considerable and valuable additions have been made, and all who are preparing themselves for the forthcoming examinations, as well as those who look forward to do so, will find it necessary to possess themselves of it. It is, of course, necessary that the student should be acquainted with geometry and algebra.

The second edition of the volume on "Practical Geometry" has been increased by the addition of short chapters on the method of applying geometry to the determination of strains in framework, and on isometrical projection.

VARIORUM.

The name of Trelonr is so often mentioned in connexion with Ludgate-hill, that one is not surprised to receive a little book titled "Ludgate-hill: Past and Present," with that gentleman's name at the foot of the preface. It is a pretty little book, with a number of appropriate illustrations, and is published by Griffith & Farran, of that neighbourhood. A large amount of interesting matter concerning the world-famous spot of which it treats has been brought together in a clear and pleasant manner, and when once the book is opened it is difficult to put it down again. One is never tired of reading about wonderful London, even though we may have heard parts of the story again and again.——"Professional Papers on Indian Engineering," published at the Thomason College Press, Roorkee, reach us as usual. These are edited by Major A. M. Brandreth, R.E., Principal. The number before us (xli., July, 1881) consists of eight papers treating wholly of water-works and water-supply. It is mentioned incidentally, while speaking of glazed stoneware pipes from Lambeth as being imperishable, that the life of iron pipes in Indian soil impregnated with saltpetre does not extend over twenty-five years.

Miscellanea.

Tunnelling the Pyrenees.—The Paris correspondent of a contemporary says:—To the various subalpine and submarine tunnels now in course of construction, or planned only on paper, is to be added another enterprise of the greatest importance to France and Spain. This is no other than a scheme for piercing a tunnel under the Pyrenees at a point as nearly as possible equidistant from the Atlantic and the Mediterranean. The great natural barrier between the two countries has, up to the present, only been surmounted by the iron road at the two extremities of the range, near Bayonne and Perpignan. Both of these routes necessitate a long *détour* for traffic between the south of France and the north of Spain, even the carriage-roads over the mountains being all inaccessible during the winter months. The advantages of a direct railway midway through the Pyrenees would, therefore, be unquestionable, as, in addition to developing intercourse between neighbouring provinces, at present separated by an unbroken wall, the monotonous journey between Paris and Madrid would be shortened by about 100 kilomètres. The initiative of this useful undertaking is due to the Spanish Government, which has introduced a Bill into the Cortes authorising the construction of the tunnel, and of a railway leading from Madrid directly to its entrance. The Government of King Alfonso offers to provide half the funds for the tunnel on condition that France undertakes an equal share in the expense.

Theatre-building in New York.—The new Wallack's Theatre, now building on Broadway near Thirtieth-street, is intended to be as far in advance of the other places of public entertainment in New York in security against fire as the Madison-square Theatre is in ventilation and mechanical appliances. The *American Architect* says:—The front, side, and rear walls of the structure are of brickwork nearly 3 ft. thick, the proscenium wall, between the stage and the auditorium, is 2 ft. thick, and the exits are of unusual size. As only the rough walls are done, it is of course impossible to judge of the remaining part of the construction; but it may certainly be said that the skeleton of the structure has all the qualities that need be desired. This example proves that the additional cost of erecting such buildings in a manner at once solid, safe, and beautiful, does not deter managers from their enterprises, and it would seem in every way desirable that the New York Building Department should seize the opportunity to adopt as nearly as possible those admirable regulations for the construction of theatres which have been recently promulgated in Paris. No hardship would be inflicted upon any one by the enforcement of these rules in relation to all future edifices of that class, while the ultimate saving of life and property would probably be of inestimable importance. The coming decade will undoubtedly witness the building of many theatres in the upper part of New York, and it is quite time to make sure that Mr. Wallack's example will be generally followed, and, if possible, improved upon.

Birmingham Architectural Association. The total number of members is now forty-four, of whom twenty-nine are ordinary, and fifteen honorary members. The annual meeting was held on the 2nd of November, and was well attended. The president, Mr. George Ingall, delivered an address; and the whole of the class drawings were exhibited, in addition to a numerous collection of sketches, photographs, &c. The ordinary meetings held during the session were occupied as follows:—Address by the Chairman, Mr. R. B. Morgan; papers on "Poetry in Relation to Art," by Mr. T. W. Camm; on "Architectural Physiognomy," by Mr. Fred. W. Cross; on "Decoration," by Mr. W. H. Kendrick; one entitled "Some Ideas on the Practical Ventilation of Private and Public Buildings," by Mr. William Henman; lecture on "Art Workmen,—Past and Present," by Mr. John Roddis"; papers on "Proportion," by Mr. A. Reading; on "Japanese Decorative Art in its Relation to the Architect," by Mr. J. W. Tonks; on "Pictorial Art," by Mr. W. H. Vernon; on "Bricks and Terra Cotta," by Mr. Enoch Wood; and on "Renaissance Architecture," by Mr. O. Essex. The meetings of the classes were generally well attended, and a fair amount of work was contributed by the members, especially by those who joined the Elementary Class of Design. The Saturday afternoon visits to buildings were as numerously attended as in previous sessions.

Carlisle.—Extensive alterations and additions have been made to the premises in English-street, recently purchased by Mr. Jas. Atkinson, draper. The back buildings have been entirely rebuilt, and the main front buildings have been gutted and re-modelled. The interior of the shop is effectively lighted by the lantern-roof over a gallery on the first floor. The new premises, comprising shop, show-rooms, millinery saloon, workshops, and workrooms, are now among the most complete of their kind in Carlisle. The works have been expeditiously carried out in a satisfactory manner, Mr. T. Milburn being contractor for brickwork and masonry, and Messrs. Bates & Forster for carpenter and joiner's work; the remaining trades were carried out by local tradesmen. The prismatic lights have been supplied by Messrs. Hayward Bros.; the mosaic floor by Mr. Ebner; and the revolving shutters by Messrs. Clark, Bunnett, & Co. The works have been carried out from the designs and under the superintendence of the architect, Mr. Geo. D. Oliver, of the firm of Messrs. Hetherington & Oliver, of Carlisle.

Moving a Large Hotel.—A large hotel in Boston, the Pelham, was lately moved a distance of 13 ft. 10 in., with a view to widening Tremont-street. The building is of freestone and brick, with frontages of 96 ft. and 69 ft., a basement and seven stories, the total height above the tramways used being 96 ft. The weight was 5,000 tons. The furniture was not disturbed during removal, nor were the occupants of the stores on the first floor and in some of the rooms, the various pipe connexions being kept up with flexible tubes. Substantial stone and brick foundations were made for iron rails and rollers, and the building was forced to its new position by means of fifty-six screws operated by hand against timbers arranged to uniformly distribute the pressure against the building (which was firmly braced in the lower part). Two months and twenty days were occupied in preparation. The moving itself was begun on August 21st, and finished on August 25th, but the actual time of moving was only thirteen hours and forty minutes. The greatest speed was 2 in. in four minutes. The whole cost was about $30,000.

The Church of St. Mary-at-Hill, Eastcheap.—The rector of this parish has given notice of appeal to the Judicial Committee of the Privy Council, from the decision given last week by Lord Penzance in the case of Peek *v.* Trower, refusing a faculty to expend from the parochial funds about 500*l.* for alterations in the interior of the church, which faculty Dr. Tristram, Chancellor of the Diocese of London, had decreed.

The Largest Printing Establishment in the North of England has lately been erected at Leeds, by Mr. A. Cooke. It is three stories high, and consists of a large open ground-floor, with two stories of galleries running all round, and a large open well. It is mostly lighted from the roof, and the roof glazing is done by Mr. Helliwell, of Brighouse, Yorkshire, on his patent system of glazing without putty.

The Female School of Art.—The exhibition of works executed by the students to whom medals and prizes have been awarded for the past year is satisfactory, maintaining the advance which has been lately apparent in the school. Ninety awards have been made to forty-eight students. The Queen's Scholarship, of 30*l.*, has been gained by Constance Wood; the Clothworkers' Scholarship, of 20*l.*, by Mary Elizabeth Harding; the Gilchrist Scholarship, of 50*l.*, second year, by Ethel Chapman Nisbet; first year, Ottilie Amalie Bodé; the Queen's Gold Medal, by Mary Elizabeth Harding; a National Silver Medal, by Florence Reason, Ethel Chapman Nisbet, and Mary Emily Carter; National Bronze Medals: for study from the antique, gladiator, Norah Waugh; for group in water colour, Rose Ethel Welby; for water-colour studies, Edith Harris and Lilian Abraham; and for design, Edith Robinson. National Book Prize, monochrome, the Wrestlers, by Norah Waugh. Gilchrist Prize, 3*l.*, advanced ornament, is divided equally between Edith Rowe and Agnes Lee; the Baroness Burdett-Coutts Scholarship, of 40*l.*, has been gained by Dora Crittenden; and the Baroness Burdett-Coutts Prizes, for modelling a hand from nature, 2*l.*, by Henrietta Marcus; for design for cameo brooch, 1st prize, 5*l.*, Florence Reason; 2nd prize, 2*l.*, Edith Ellison. Some specimens of wood-carving by female students of the National School of Wood Carving, at the Albert Hall, are creditable.

Mr. George Hill, Sculptor.—We regret to announce the death of Mr. George Hill, monumental sculptor, of Merton studios, Manresa-road, Chelsea, which took place on Thursday, the 10th inst., after a short illness. Whilst pursuing his daily vocation, he was seized with paralysis, and died the following morning; he was interred in Brompton Cemetery. For many years Mr. Hill was connected with the late eminent sculptor, J. Birnie Phillip, and took a prominent part in the execution of the podium of the Albert Memorial in Hyde Park, representing architects and sculptors, the Ludgate-hill Viaduct, masonry piers of Blackfriars Bridge, and the spandrel arches of Chelsea Bridge. He was very successful in designing mural tablets; amongst his latter works may be mentioned the reredos sent to Mocha, "Mauritius," pulpits to Chichester Cathedral and Liverpool Memorial Church, of which notices have, from time to time, appeared in the *Builder*, together with many other works executed during his thirty years' sojourn in Chelsea.—*West Middlesex Advertiser.*

Death of Mr. Joseph Nettlefold.—Mr. Joseph Nettlefold, of Birmingham, died suddenly at his Northern residence, near Pitlochry, Perthshire, on Tuesday last. Mr. Nettlefold was for some time the partner of Mr. Joseph Chamberlain, the President of the Board of Trade, and since their enormous screw manufactories passed into the hands of a company, under the title of "Nettlefold's (Limited)," deceased has acted as chairman of the directorate. Only six weeks ago he announced that his magnificent collection of the paintings of David Cox, which has been valued at 40,000*l.*, was to become the property of the Art Gallery Committee upon his death, which has so soon followed. One of the conditions of the bequest is that the paintings shall be exhibited only in a gallery lighted by electricity.

Cantor Lectures.—On Monday evening last (21st inst.), the first lecture of the first course was delivered by Mr. Thomas Bolas, F.C.S., the subject being "Some of the Industrial Uses of the Calcium Compounds." Mr. Bolas alluded to the distribution and occurrence of calcium in nature, and the abundant existence of carbonate of lime as limestone, chalk, marble, calcspar, shells, &c. He referred to the new metallurgy of Davy, as initiated by the isolation of potassium; and pointed out the probability that some of those metals which are abundant, but not in general use, may soon come into notable importance.

Birmingham and Suburban Tramways. About twenty miles of tramways are proposed to be laid, for connecting Birmingham and the suburbs, and application will be made to the Board of Trade immediately for the provisional order. The projected scheme will include in its radius stations at Perry Barr, Nechells Park-road, Saltley-road, Small Heath, Sparkbrook, and Moseley. The proposed termini are Albert-street and Corporation-street. The engineer for the northern division, including Perry Barr, Nechells, and Saltley, is Mr. E. Pritchard; and for the other part, Mr. Shipway.

The Hindley Sewerage Scheme.—A special meeting of the Board was held at the Board-room, and the sewerage schemes which had been invited to be sent in, and which numbered ten, were carefully examined, and it was decided that the premium offered, 60*l.*, be awarded to the author of plan No. 7, under the motto "Health," but that the Board do not bind themselves to carry out the scheme. The following were the authors:—No. 1, "Indicator," by Henry Bancroft, Manchester; No. 2, "Non nobis sobun," by Winstanley & Ashworth, Manchester; No. 3, "Simplicity," by James Lomax, Bolton; No. 4, "Complete," by Gotto & Beesley, London; No. 5, "Endymion," by J. S. Caldwell, Hindley; No. 6, "Simplicitas et Utilitas," by Newton & Smith, Manchester; No. 7, "Health," by T. & J. H. Nuttall, Bury, Lancashire; No. 8, "Salus Populi," by George Heaton, Wigan; No. 9, "1881," by J. F. Tyler, Parbold; No. 10, "Practical Experience," by Goodison, Atkinson, & Forde, Liverpool. It was decided to send the plan "Health" to the Ince Local Board for inspection.

A New Brewery has just been completed at Burton-on-Trent, for Mr. T. Sykes, of Liverpool. It is erected upon land belonging to the Marquis of Anglesea, near the Midland Railway, upon the south side of the town, and comprises in addition to the complete brewery buildings, the necessary stores, stables, &c., together with roads and boundary-walls. The contractors for the buildings have been Messrs T. Lowe & Sons; for the coppersmiths' work, Messrs. Bindley & Briggs; and for the machinery, Messrs. Buxton & Thornley, all of Burton. Messrs. Gimson & Co., of Leicester, have supplied the ironwork for the building, and Mr. J. Stanyon has acted as clerk of works. The whole work has been carried out from the designs and under the superintendence of Mr. J. B. Everard, C.E, of Leicester.

Wonders at Welbeck Abbey.—H.R.H. the Prince of Wales, during his visit to Welbeck Abbey, will observe the marvellous works carried out by the late Duke of Portland, not the least of which is the new range of stable buildings, erected upon a magnificent scale, presenting a noble appearance on approaching, and the interior of which, for 130 horses, was fitted up by Mr. James Barton, of 151, Oxford-street, London, from designs and special patterns approved by the late Duke. The stall and loose-box mangers were made of iron, and surface coated, both inside and out, by the patent enamelled process, rendering them easy to cleanse, and obviating any possibility of infection. The work is said to be probably unsurpassed in the kingdom.

National Association of Master Builders of Great Britain.—Mr. Stanley G. Bird, of London, the president, accompanied by Mr. E. Hughes, of Liverpool, has been making a tour of the Northern provinces with a view of inducing the Local Builders' Associations to join the National. They also brought before the trade in the North the question of their insurance against accidents arising under the Employers' Liability Act, advocating the advantages offered by the Builders' Accident Insurance, which is established on mutual principles. We understand agents were appointed at Preston, Carlisle, Edinburgh, Glasgow, Newcastle, and South Shields.

Clarkson Memorial, Wisbech.—Messrs. S. & W. Pattinson, of Ruskington, say that they were the contractors for this work, although Messrs. Farmer & Brindley executed the sculpture and carving.

TENDERS

For the erection of a new building at 14, Austin-friars, for Mr. Henry Oppenheim. Mr. E. A. Grüning, architect. Quantities by Messrs. H. Blackwell & R. Griggs:—

John Mowlem & Co.	£11,329 0 0
Colls & Sons	10,670 0 0
Holland & Hannen	10,514 0 0
E. Lawrence	9,975 0 0
Wm. Brass	9,893 0 0
Clarke & Bracey (accepted)	9,585 0 0

For the erection of premises in Carter-lane, Doctors'-commons. Mr. Alexander Peebles, architect:—

McCormick & Sons	£7,778 0 0
Colls & Sons	7,501 0 0
Hall, Beddall, & Co.	7,357 0 0
Jerrard	7,046 0 0
Mark Patrick & Son	6,973 0 0
Lathey Bros.	6,904 0 0
Macey & Sons	6,865 0 0
Ashby & Horner	6,780 0 0
Ashby Bros.	6,576 0 0
Kirk & Randall	6,506 0 0
Morter	6,430 0 0
Clark & Bracey	6,408 0 0
Lawrance	6,185 0 0
Perry & Co. (accepted)	6,175 0 0

For pulling down and rebuilding No. 331, Oxford-street, Mr. Collins, architect. Quantities supplied:—

Sabey & Son	£5,000 0 0
Robinson	5,720 0 0
Brass	5,333 0 0
King & Son	5,300 0 0
Dove Bros.	5,294 0 0
Ashby Bros.	5,286 0 0
McLachlan & Sons	5,240 0 0
Mark	5,200 0 0
Morter	5,065 0 0
Abrahams	4,998 0 0
Croaker	4,970 0 0
Kirk & Randall	4,960 0 0
Downs	4,837 0 0

For alterations and additions, gymnasium, &c., to Woodford Lodge, for Mr. W. Savage. Mr. Charles Bell, architect:—

Egan, Woodford	£1,050 0 0

For a Mission Chapel at South Tottenham. Mr. Charles Bell, architect:—

Humphreys & Son	£1,250 0 0
Thornton	1,162 0 0

For new Wesleyan Chapel at Skegness. Mr. Charle Bell, architect:—

Kidd	£2,575 0 0
Dunkley	2,150 0 0
Topham	2,034 0 0
Riggall	1,989 0 0
Holmes (accepted)	1,847 0 0

For sanitary works, Elm Park Estate, Finchley. Messrs. E. E. Croucher & Co., Chancery-lane, surveyors:—

McKenzie, Williams, & Co. (accepted)	£200 0 0

For the construction of road and drainage works on the United Land Company's Sudbury Estate:—

Nowell & Robson	£4,613 0 0
Wilson & Stodhard	4,301 0 0
J. Cardus	4,265 0 0
W. Crockett	4,080 0 0
C. Killingback	9,999 0 0
G. Acock	3,975 0 0
T. Wainwright	3,945 0 0
J. Pizzey	3,928 0 0
B. Cooke & Co.	3,894 0 0
Dyer & Huntley	3,695 10 0
H. Haynes	3,650 0 0
G. Felton	3,618 0 0
Ford & Everett	3,499 0 0
W. Neave & Son	3,440 0 0
Rowland Bros. (accepted)	3,210 0 0
Wilkes & Co. (too late)	3,376 0 0

For the construction of roads, drainage, and bridge on the United Land Company's Gordon House Estate, Isleworth:—

Nowell & Robson	5,338 0 0
J. Pizzey	5,285 0 0
C. Killingback	4,890 0 0
Cooke & Co.	4,754 0 0
J. Ball	4,613 0 0
Wilson & Stodhard	4,575 0 0
Beadle Bros.	4,570 0 0
Wilkes & Co. (too late)	4,533 8 1
Dyer & Huntley	4,158 0 0
Neave & Son	4,110 0 0
G. Felton	3,945 0 0
G. Acock	3,607 0 0
Tomes & Wimpey	3,587 0 0
Ford & Everett (accepted)	3,333 0 0

For a new roof of English oak, to be covered with lead, on the north transept of the Priory Church, Christchurch, Hants, for the Restoration Committee. Mr. B. Edmund Ferrey, architect:—

White & London	£790 3 0
Brock & Son, London	745 0 0
Higgs & Hill, London	744 0 0
Hoare Bros. & Walden, Bournemouth	740 10 0
W. Griffen, Wimborne	732 7 0
J. Stone, Christchurch	722 10 0
Searle & Co.	597 0 0
S. Mintey, Bournemouth	575 10 0
J. B. Hyde, Christchurch	490 0 0
H. W. Jenkins & Son, Christchurch	489 0 0
W. Howe, Christchurch (accepted)	419 14 0

For residence, Gipsy-hill, for Mr. W. H. Vaughan. Mr. Edwin T. Hall, architect. Quantities by Messrs. Evans & Deacon:—

Marriott Bros., High Barnet	£2,951 0 0
J. Holloway, Lavender-hill	2,741 0 0
J. Garnham, Norwood	2,734 0 0
C. W. Fox, Anerley	2,710 0 0
G. & S. Fisher, Camberwell	2,576 0 0
B. E. Nightingale, Lambeth*	2,530 0 0

* Accepted.

For stables, Tunbridge Wells, for Mr. C. G. Hale. Mr. Edwin T. Hall, architect:—

Punnett & Sons, Tonbridge	£630 0 0
Strange & Sons, Tunbridge Wells	616 0 0
Hope & Constable, Penshurst (acceptd.)	550 0 0

For additions to the Hermitage, Crowborough, Sussex, for Mrs. J. H. Barclay. Mr. Edwin T. Hall, architect:—

Punnett & Sons, Tonbridge (accepted)	£950 0 0

For alterations to the Crown and Anchor public-house, Brook-street, Ratcliffe, for Mr. T. D. Hill. Mr. T. W. Barry, architect:—

King & Son	£530 0 0
T. Shuff	430 0 0
Bedwin (accepted)	350 0 0

For the erection of dwelling-house and stables at Willesden, for Mr. H. Dobbin. Mr. H. W. Sexton, architect:—

B. T. Wood (accepted)	£735 0 0

For alterations to the Old Red Lion, Aldersgate-street. Mr. H. W. Sexton, architect:—

E. J. Laughton (accepted)	£230 0 0

For the erection of house and shop, Charles street, Stepney, for Mr. Gilson. Messrs. Hammack & Lambert, architects:—

Parrott	£1,460 0 0
Cubitt	1,340 0 0

For the erection of new schools, Stamford Hill, N. for the Tottenham School Board. Messrs. E. Ellis & Son, architects:—

Rawlinson, Tottenham	£10,886	18	0
Harradine, Gloucester-road	10,080	0	0
Humphreys & Sons, Tottenham	9,975	0	0
Morton, Crouch-hill	9,785	0	0
Harper, Hackney	9,775	0	0
Shurmur, Lower Clapton	9,750	0	0
Harris & Wardrop, Woolwood-st.	9,530	0	0
Crockett, St. Pancras	9,500	0	0
Goodman, Barnsbury	9,494	0	0
Mattock, Bros., Wood Green	9,393	0	0
Seal, Bros., Richmond	9,345	0	0
Higgs, Park-lane	9,330	0	0
Gardener, Waltham Abbey	9,283	10	6
Linnell, Tottenham	9,238	0	0
Perry & Co., Bow	9,127	0	0
Angood, Finsbury Park	9,100	0	0
Bentley, Waltham Abbey	9,095	0	0
Parker, Peckham	8,946	0	0
Higgs, Loughborough Junction	8,802	0	0
Richardson, Clapham	8,784	0	0
Vernon & Ewens, Westminster	8,781	0	0
C. Wall, Chelsea	8,780	0	0
Palmer & Sons, St. George's, E.	8,653	0	0
Wood, Hackney	8,541	0	0
Childs, Tottenham	8,400	0	0
Williams & Wheeler, Ravenscourt Park	8,200	0	0

For the erection of three cottages and garden walls at Newington, St. Lawrence, Kent, for Mr. William Spain. Mr. E. L. Elgar, architect. Quantities supplied:—

T. Daskett	£774	5	0
T. S. Hobbs	731	16	1
T. Bugden	535	10	0
T. Elgar	533	0	0
B. J. Cowell	530	0	0
Newby, Bros.	514	0	3
H. Bowman	496	0	0
E. Cullen (too late)	480	0	0
W. H. Port	479	0	0
C. Home (accepted)	435	0	0
S. B. Redman	430	0	0

For the erection of cow house and stalling, Blagden Farm, Merton, near Maldon, for Mr. T. C. Cowper-Essex. Mr. Walter Graves, architect:—

Haynes, Alperton	£320	0	0
Pollard, London	277	0	0

For erection of farm buildings, &c., Crofton Court, Bromley, Kent, for Mr. H. Norman:—
Taylor & Son (accepted).

For the erection of a country residence at Starts-hill, Orpington, for Mr. J. L. Lovibond. Mr. G. St. Pierre Harris, architect:—

Grubb, Bromley	£1,385	0	0
Haisman, Foots Cray	1,156	0	0
Wood, Chislehurst	1,130	0	0
Taylor & Son, Bromley (accepted)	1,049	0	0

For stables, coach-house, &c. at the Maxwell Arms, Orpington, for Messrs. John Fox & Sons. Mr. G. St. Pierre Harris, architect:—

Treadwell, Orpington	£629	0	0
Grubb, Bromley (too late)	545	0	0
Wood, Chislehurst	476	0	0
Haisman, Foots Cray	459	0	0
Taylor & Son, Bromley (accepted)	458	0	0

For school-room at Starts-hill, Orpington. Mr. G. St. Pierre Harris, architect:—

Haisman, Foots Cray (accepted)	£270	0	0

For a house in Tufnell Park, for Mr. Bradley. Mr. George Trueflitt, architect:—

Williams & Son	£1,830	0	0
Ball & Wickes	1,706	0	0
Stanley Bird (accepted)	1,700	0	0

For additions to a house, Wimbledon Park, for Mr. Morton. Mr. George Trueflitt, architect:—

Avias & Co.	£1,180	0	0
Aries	1,045	0	0
Stanley Bird (accepted)	974	0	0

For fittings to the London and South-Western Bank, Camden-town. Messrs. Edmeston, architects:—

Lascelles	£459	0	0
Jackson & Graham	456	0	0
Lucas	417	0	0
McLachlan & Sons	419	0	0
Dowsett	389	0	0

For new parochial schools, St. Luke's, Old-street, for the Trustees. Mr. A. Allen, architect:—

Moriand	£2,909	0	0
Dove Bros.	2,675	0	0
Lawrence	2,645	0	0
Brass	2,595	0	0
Harper	2,497	0	0
Wall Bros. (accepted)	2,414	0	0

For furniture and fittings, Bermondsey Town-hall. Messrs. John Elkington & Son, architects:—

Seex & Son	£1,220	0	0
Lucraft & Son	1,150	0	0
Shoolbred & Co.	1,102	12	0
M. F. C. Turpin	945	0	0
Tarn & Co.	910	0	0
Bartholomew & Co.	895	0	0
Atkinson & Co.	873	0	0
John Finch & Co. (accepted)	801	12	6

For alterations and repairs to the Black Horse Tavern, High-street, Borough, for the Bodega Company, Limited:—
C. F. Howlett (accepted).

For warming St. Mary's Church, Greenwich, by their improved system of hot-water apparatus:—
John Edmonds & Co., Lillie-bridge, accepted.

For heating apparatus to the Convent of the Sacred Heart, Wandsworth:—
John Edmonds & Co., Lillie-bridge, accepted.

For new house, with shop and offices, &c., in High-road, Leytonstone, for Mr. W. Watkins. Mr. E. Crosse, architect:—

W. Winsor (accepted)	£632	14	10

For two new houses, Abbey-street, Bermondsey, for Mr. Wm. Wilkins. Mr. E. Crosse, architect. Reduced estimate:—

W. Winsor (accepted)	£650	0	0

For repairs to eleven houses in Albany-road, Camberwell, for Mr. H. W. Wilson. Mr. E. Crosse, architect:—

G. Warren	£338	0	0
S. Kipps	220	10	0
H. Baldwin (accepted)	205	10	0

For the whole of the blinds to the new Medical Schools, Charing-cross Hospital. Mr. J. J. Thomson, architect:—
Guynan & Son, Carburton-street (accepted).

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F. W. H.—J. P.—W. S. S.—Indoctus.—Messrs. J.—P. W. H.—J. W. H.—D. W.—H. T.—T. B.—H. F. P.—E. C.—E. P.—T. W. H.—H. H. B.—W. & Co.—W. W.—G. & G.—T. N.—M. & S.—J. E. & Co.—R. Bros.—W. B. (sent too late).—G. M.—W. M.—J. R.—H. A. G.—J. R. H.—J. W. S.—W. G. T.—R. G. R.—H. & Co.—L. W. J.—P. P. P.—I. & P.—J. B.—A. P.—R. O. E.—H. & L.—J. F.—J. W. S.—A. F.—L. B. & W.—E. T. H.—W. C.—E. H. C. (further information would be needed for a decision; we believe, however, the Board's charge correct).—W. A. I. (thanks, not desired).—Clerk of Works (next week).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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